DUPLICATE ALSO

NATIONAL
METEOROLOGICAL
07 OCT 1997
LIBRARY

UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

September, 1997

Data Assimilation
Meteorological Office
London Rd
Bracknell
Berkshire
RG12 2SZ

This report has not been published. Permission to quote from it should be obtained from the Head of Data Assimilation

ORGS UKMO U

National Meteorological Library
FitzRoy Road, Exeter, Devon. EX1 3PB

Distribution List

Mr B Sumner	NMC, Victoria, Australia
Dr S. C. Chou	CPTEC/INPE, Brazil
Dr H W Christ	Deutscher Wetterdienst, Hamburg, Germany
Mr M Engels	German Military Geophysical Office, Mont Royal, Germany.
Ms C Nelson	NMC, Washington, USA
Mr B Lacroix	SCEM METEO-FRANCE.
Mr E A Meindl	National Data Buoy Centre, Stennis Space Center, USA
Mr G Verner	Canadian Meteorological Centre, Quebec, Canada
Permanent Rep. with WMO	Moscow, Russia
Hydrometcentre of the Russian Federation	Moscow, Russia
Mr Nobuo Sato	JMA, Tokyo, Japan
Mr Francois Lalaurette	Head, Meteorological Operations Section, ECMWF, Reading, UK
Dr M J Uddstrom	Met. Service, Wellington, New Zealand
Mr R S Bell	Met. Office, Bracknell, UK
Dr R Bromley	Met. Office, Bracknell, UK
Mr R W Lunnon	Met. Office, Bracknell, UK
Dr B Macpherson	Met. Office, Bracknell, UK
Mr B Oatway	Met. Office, Bracknell, UK
Mr C A Parrett	Met. Office, Bracknell, UK
Mr D B Shaw	Met. Office, Bracknell, UK
Mr S G Smith	Met. Office, Bracknell, UK
National Meteorological Library	Met. Office, Bracknell, UK

CONTENTS

1. Introduction

2. Global Data Monitoring Statistics

3. Composite Observing Systems for the North Atlantic (COSNA)

...oooOOOooo...

1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

Dr. B. Macpherson
Head of Observation Processing and Monitoring Section
Data Assimilation
Meteorological Office
London Road
Bracknell
Berkshire
United Kingdom
RG12 2SZ

2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of AIREP/ASDAR reports received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX 1 shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-12 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

N.B. 500 km SATEMs are no longer assimilated into the UKMO global Unified Model. Both 500 km and 120 km SATEMs were replaced on 16th April 1996 by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS (from NOAA-12 and NOAA-14).

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area
10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics (**Geopotential Height and Windspeed at 100 and 500 hPa**) for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

...oooOOOooo...

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS $\geq$ 20 , and one or more of the following:

1.| bias|	$\geq$ 4 hPa	(pressure),
	$\geq$ 5 m s^{-1}	(wind speed),
	$\geq$ 30 degrees	(direction).
2.SD	$\geq$ 6 hPa	(pressure),
	$\geq$ 80 degrees	(direction).
3.PGE	$>$ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
CG2248	ALL	MSLP	SUR	62	62	100	0.0	0.0	0.0
CYBJ	ALL	MSLP	SUR	22	13	59	5.3	3.9	6.6
CYLX	ALL	MSLP	SUR	20	13	65	1.8	-13.5	13.7
C6FA6	ALL	MSLP	SUR	50	0	0	1.2	-6.4	6.5
C6IL3	ALL	MSLP	SUR	26	0	0	1.0	4.9	5.0
DOWVD2D	ALL	MSLP	SUR	69	0	0	1.5	5.4	5.6
ELNW7	ALL	MSLP	SUR	26	26	100	0.0	0.0	0.0
ELSU8	ALL	MSLP	SUR	28	0	0	2.3	6.0	6.5
ELUB5	ALL	MSLP	SUR	90	2	2	3.3	-8.2	8.8
ELUO3	ALL	MSLP	SUR	26	0	0	1.3	6.3	6.4
EQUY	ALL	MSLP	SUR	25	1	4	1.4	11.1	11.2
J8EL6	ALL	MSLP	SUR	68	8	12	1.4	-6.0	6.1
UHVW	ALL	MSLP	SUR	31	1	3	1.8	4.6	4.9
VCQC	ALL	MSLP	SUR	31	10	32	2.8	0.3	2.8
VCTD	ALL	MSLP	SUR	25	23	92	3.3	-10.4	10.9
VC6750	ALL	MSLP	SUR	42	29	69	4.6	-5.3	7.1
VTCN	ALL	MSLP	SUR	55	0	0	2.4	6.5	7.0
V7AW8	ALL	MSLP	SUR	24	0	0	1.0	4.9	5.0
WCF3012	ALL	MSLP	SUR	34	11	32	5.8	-2.9	6.5
3EMW5	ALL	MSLP	SUR	21	4	19	4.1	-4.2	5.9
3FGN3	ALL	MSLP	SUR	30	0	0	1.5	-5.4	5.6
3FKZ3	ALL	MSLP	SUR	46	0	0	1.2	4.4	4.5
9MCP6	ALL	MSLP	SUR	61	0	0	0.9	7.7	7.8
9VIH	ALL	MSLP	SUR	24	0	0	2.0	-5.5	5.8
9VPK	ALL	MSLP	SUR	36	0	0	4.1	4.0	5.7
WIND SPEED									
DPUF	ALL	SPEED	SUR	95	0	0	4.9	9.6	10.8
ELOW4	ALL	SPEED	SUR	27	1	4	6.5	8.6	10.8
ELUU4	ALL	SPEED	SUR	36	0	0	6.0	7.9	10.0
GHMA	ALL	SPEED	SUR	57	0	0	2.5	-5.2	5.8
GQEK	ALL	SPEED	SUR	20	0	0	3.0	5.9	6.6
GQUK	ALL	SPEED	SUR	29	0	0	4.9	7.2	8.7
JCUH	ALL	SPEED	SUR	28	1	4	8.1	8.1	11.4
J8CV5	ALL	SPEED	SUR	52	0	0	5.5	10.4	11.8
OXRA6	ALL	SPEED	SUR	50	0	0	3.4	5.2	6.3
PEMA	ALL	SPEED	SUR	22	0	0	5.5	5.5	7.8
PEXU	ALL	SPEED	SUR	34	0	0	4.5	7.8	9.0
PGDW	ALL	SPEED	SUR	36	1	3	4.2	5.1	6.6
V7AI	ALL	SPEED	SUR	23	0	0	3.3	5.2	6.2
ZCBE7	ALL	SPEED	SUR	38	0	0	3.3	-6.7	7.5
ZCCV5	ALL	SPEED	SUR	74	0	0	8.6	7.4	11.3
3ELC	ALL	SPEED	SUR	54	1	2	4.4	10.2	11.1
3FHE4	ALL	SPEED	SUR	54	0	0	4.1	7.0	8.1
3FSL4	ALL	SPEED	SUR	23	0	0	2.9	5.2	5.9
62125	ALL	SPEED	SUR	78	0	0	2.6	5.0	5.6
9VJS	ALL	SPEED	SUR	20	0	0	1.7	5.9	6.1
WIND DIRECTION									
C6T2064	ALL	DIRN.	SUR	24	0	0	50.7	-36.4	62.4
C60Q8	ALL	DIRN.	SUR	29	0	0	67.2	-34.3	75.4
UCON	ALL	DIRN.	SUR	21	0	0	64.8	45.9	79.4
VSBU2	ALL	DIRN.	SUR	49	0	0	96.7	69.6	119.2
VTCN	ALL	DIRN.	SUR	29	0	0	98.3	-16.2	99.6
3FSL4	ALL	DIRN.	SUR	23	0	0	59.0	37.4	69.9
32322	ALL	DIRN.	SUR	32	0	0	51.9	-35.1	62.6
45143	ALL	DIRN.	SUR	84	0	0	21.8	31.7	38.4
46060	ALL	DIRN.	SUR	78	0	0	37.4	-30.0	47.9
52004	ALL	DIRN.	SUR	56	0	0	68.3	-43.8	81.1
62302	ALL	DIRN.	SUR	89	0	0	63.3	34.3	72.0

AVAILABILITY – SHIP/SYNOP – SEPTEMBER 1997

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 19461

FIGURE 1

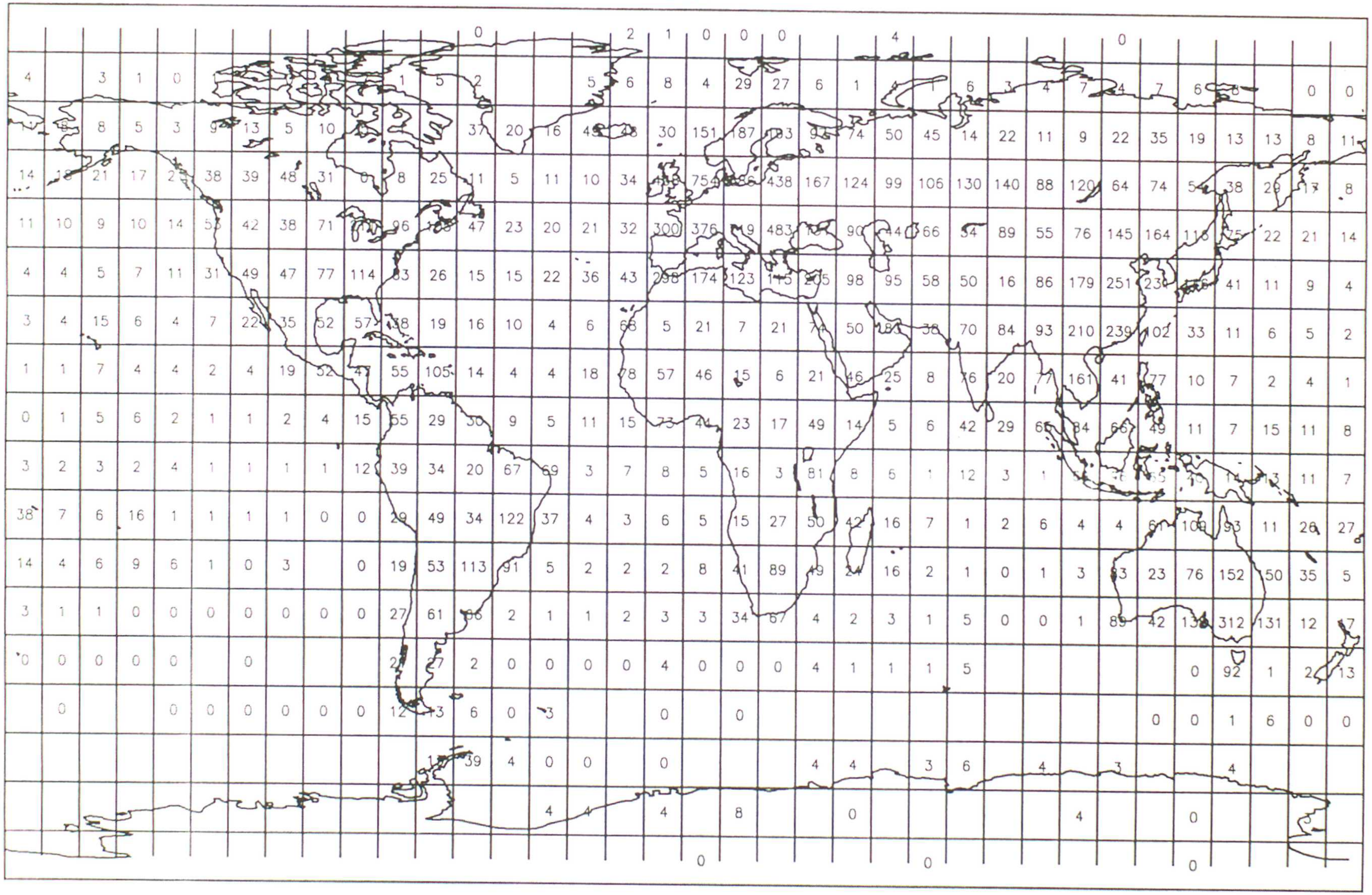

0 2 1 0 0 0 4 0
4 3 1 0 1 5 2 5 6 8 4 29 27 6 1 1 6 3 4 7 4 7 6 8 0 0
11 8 8 5 3 9 13 5 10 37 20 16 45 48 30 151 187 183 93 74 50 45 14 22 11 9 22 35 19 13 13 8 11
14 18 21 17 2 38 39 48 31 0 8 25 11 5 11 10 34 418 754 286 438 167 124 99 106 130 140 88 120 64 74 54 38 29 17 8
11 10 9 10 14 53 42 38 71 270 96 125 47 23 20 21 32 300 376 319 483 161 90 44 66 54 89 55 76 145 164 115 75 22 21 14
4 4 5 7 11 31 49 47 77 114 83 26 15 15 22 36 43 298 174 123 145 205 98 95 58 50 16 86 179 251 230 156 41 11 9 4
3 4 15 6 4 7 22 35 52 57 38 19 16 10 4 6 68 5 21 7 21 74 50 183 38 70 84 93 210 239 102 33 11 6 5 2
1 1 7 4 4 2 4 19 52 47 55 105 14 4 4 18 78 57 46 15 6 21 46 25 8 76 20 77 161 41 77 10 7 2 4 1
0 1 5 6 2 1 1 2 4 15 55 29 30 9 5 11 15 73 44 23 17 49 14 5 6 42 29 65 84 66 49 11 7 15 11 8
3 2 3 2 4 1 1 1 1 12 39 34 20 67 69 3 7 8 5 16 3 81 8 6 1 12 3 1 5 36 65 40 14 13 11 7
38 7 6 16 1 1 1 1 0 0 29 49 34 122 37 4 3 6 5 15 27 50 42 16 7 1 2 6 4 4 61 109 93 11 26 27
14 4 6 9 6 1 0 3 0 19 53 113 91 5 2 2 2 8 41 89 49 24 16 2 1 0 1 3 83 23 76 152 50 35 5
3 1 1 0 0 0 0 0 0 0 27 61 66 2 1 1 2 3 3 34 67 4 2 3 1 5 0 0 1 89 42 138 312 131 12 17
0 0 0 0 0 0 21 27 2 0 0 0 0 4 0 0 0 4 1 1 1 5 0 92 1 2 13
0 0 0 0 0 0 0 12 13 6 0 3 0 0 0 0 1 6 0 0
1 39 4 0 0 0 4 4 3 6 4 3 4
4 4 4 8 0 4 0
0 0 0

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoys.

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA : NOBS ≥ 20 , and one or more of the following:

1.| bias| ≥ 4 hPa (pressure),
≥ 5 m s^{-1} (wind speed),
≥ 30 degrees (direction).

2.SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).
3.PGE ≥ 25.

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
15525	-31.1	8.5	ALL	MSLP	SUR	72	61	85	0.5	-0.3	0.6
15526	-30.9	8.6	ALL	MSLP	SUR	75	62	83	0.4	-0.5	0.6
15527	-28.7	6.8	ALL	MSLP	SUR	66	56	85	1.1	0.5	1.3
15528	-32.4	10.0	ALL	MSLP	SUR	67	55	82	0.4	0.3	0.5
15530	-31.2	-2.9	ALL	MSLP	SUR	55	41	75	1.1	0.1	1.1
15531	-30.9	-2.9	ALL	MSLP	SUR	58	44	76	3.1	0.1	3.1
15532	-33.0	-7.2	ALL	MSLP	SUR	67	34	51	1.1	0.3	1.1
15533	-29.7	-6.5	ALL	MSLP	SUR	50	35	70	1.0	0.1	1.0
15534	-26.6	-6.4	ALL	MSLP	SUR	25	24	96	0.0	-6.3	6.3
15535	-23.0	-6.8	ALL	MSLP	SUR	28	28	100	0.0	0.0	0.0
17510	-51.7	40.6	ALL	MSLP	SUR	288	96	33	7.0	-2.8	7.6
17907	-38.2	6.3	ALL	MSLP	SUR	23	0	0	2.0	4.8	5.2
21530	42.1	139.5	ALL	MSLP	SUR	47	20	43	1.4	-1.2	1.8
25522	78.0	-180.0	ALL	MSLP	SUR	869	391	45	2.3	-0.4	2.3
33502	-40.2	-55.8	ALL	MSLP	SUR	22	6	27	4.5	-0.3	4.5
33946	-34.0	-43.2	ALL	MSLP	SUR	23	0	0	2.8	4.3	5.1
34906	-45.9	-38.4	ALL	MSLP	SUR	25	0	0	1.2	-5.1	5.3
44777	51.4	-0.8	ALL	MSLP	SUR	48	0	0	0.7	-8.7	8.8
51672	-3.1	-158.3	ALL	MSLP	SUR	33	0	0	2.8	5.1	5.8
54915	-31.2	-168.9	ALL	MSLP	SUR	192	0	0	1.4	-6.0	6.2
WIND DIRECTION											
21534	25.1	147.0	ALL	DIRN.	SUR	20	0	0	77.0	-49.8	91.7
41505	16.4	-54.3	ALL	DIRN.	SUR	97	0	0	19.2	31.4	36.8
41524	11.6	-46.9	ALL	DIRN.	SUR	93	1	1	30.8	37.8	48.7
44621	53.6	-36.3	ALL	DIRN.	SUR	286	3	1	27.1	-48.2	55.3
52650	8.6	156.3	ALL	DIRN.	SUR	71	0	0	50.4	-58.7	77.4
91751	11.4	162.4	ALL	DIRN.	SUR	29	0	0	18.0	73.2	75.3
91852	6.2	160.7	ALL	DIRN.	SUR	70	0	0	8.9	101.4	101.8
91877	6.1	172.1	ALL	DIRN.	SUR	22	0	0	13.1	125.3	126.0

AVAILABILITY – DRIFTER – SEPTEMBER 1997
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 5714

FIGURE 2

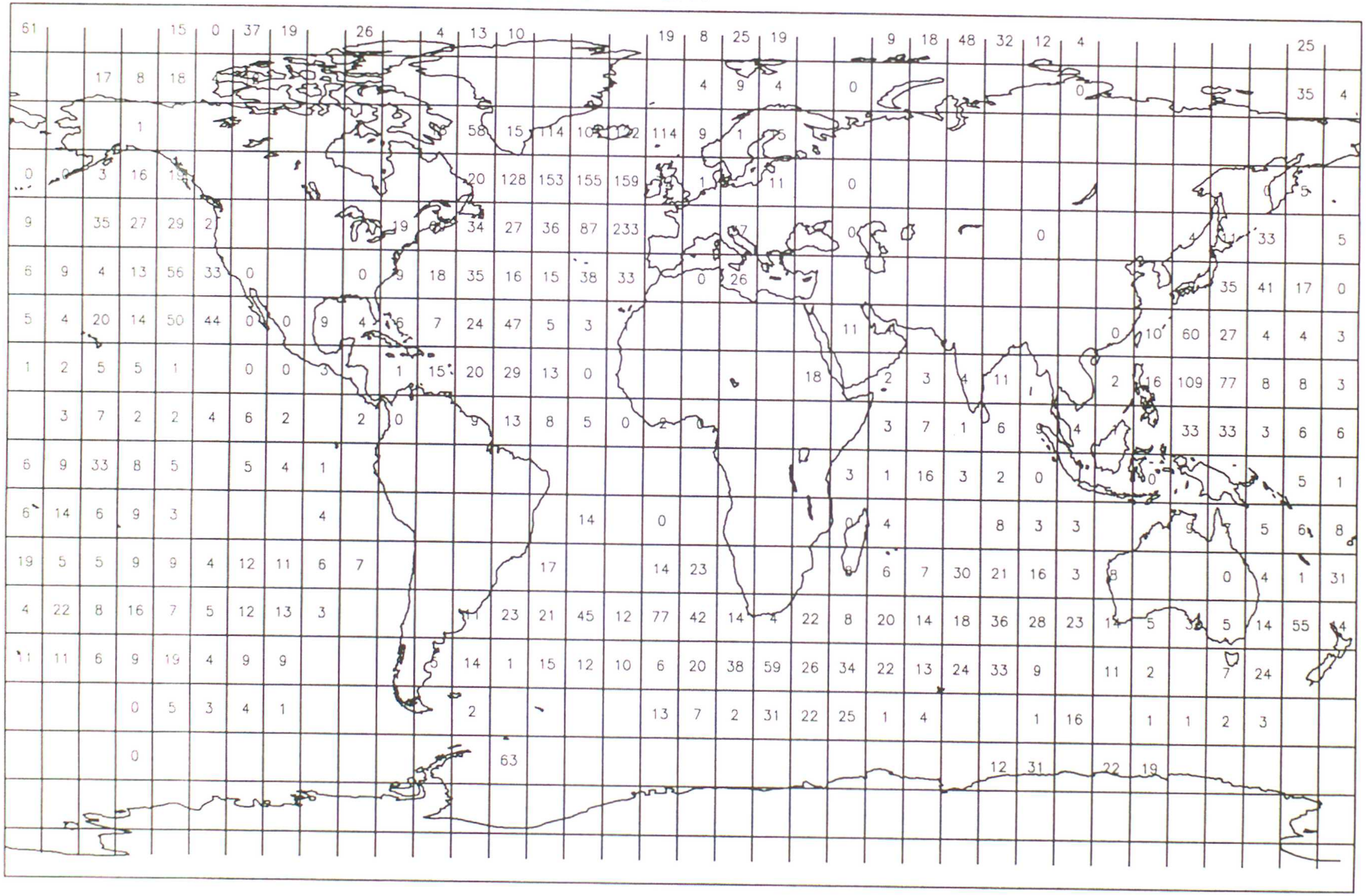

61 15 0 37 19 26 4 13 10 19 8 25 19 9 18 48 32 12 4 25
17 8 18 4 9 4 0 0 35 4
1 58 15 114 114 9 1
0 0 3 16 20 128 153 155 159 1 11 0 5
9 35 27 29 2 19 34 27 36 87 233 0 0 33 5
6 9 4 13 56 33 0 0 9 18 35 16 15 38 33 0 26 35 41 17 0
5 4 20 14 50 44 0 0 9 4 6 7 24 47 5 3 11 0 10 60 27 4 4 3
1 2 5 5 1 0 0 3 1 15 20 29 13 0 18 2 3 4 11 2 16 109 77 8 8 3
3 7 2 2 4 6 2 2 0 9 13 8 5 0 2 3 7 1 6 4 33 33 3 6 6
6 9 33 8 5 5 4 1 3 1 16 3 2 0 0 5 1
6 14 6 9 3 4 14 0 4 8 3 3 5 6 8
19 5 5 9 9 4 12 11 6 7 17 14 23 6 7 30 21 16 3 8 0 4 1 31
4 22 8 16 7 5 12 13 3 11 23 21 45 12 77 42 14 4 22 8 20 14 18 36 28 23 14 5 5 14 55 4
11 11 6 9 19 4 9 9 5 14 1 15 12 10 6 20 38 59 26 34 22 13 24 33 9 11 2 7 24
0 5 3 4 1 2 13 7 2 31 22 25 1 4 1 16 1 1 2 3
0 63 12 31 22 19

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.| bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	108	0	0	0	0.9	5.5	5.6
60468	35.6N	6.2E	1052	S8	106	106	100	0	0.0	0.0	0.0
60476	35.4N	7.2E	1116	S8	21	16	76	100	1.2	13.8	13.9
60511	35.3N	1.4E	1127	S8	109	108	99	0	0.0	8.4	8.4
60535	34.7N	3.3E	1144	S8	83	2	2	1	1.1	-5.5	5.6
60670	24.6N	9.5E	1054	S8	99	0	0	96	1.9	8.3	8.5
61233	15.2N	7.3W	265	M	44	0	0	2	1.3	-4.2	4.4
62402	26.2N	32.7E	77	M	46	46	100	0	0.0	0.0	0.0
63330	13.5N	39.5E	2212	MS	52	1	2	0	0.8	-5.0	5.1
63333	11.1N	39.7E	1916	MS	71	0	0	1	1.2	6.6	6.7
63451	8.7N	39.0E	1876	MS	52	0	0	0	1.3	-5.4	5.6
63453	8.8N	39.8E	1062	S	46	0	0	0	1.6	10.7	10.8
63478	5.1N	44.6E	320	MS	52	0	0	2	1.3	6.3	6.4
68014	19.6S	18.1E	1411	S8	85	0	0	41	1.3	-5.0	5.2
68016	19.3S	12.7E	16	M	78	0	0	3	1.7	4.2	4.5
68442	29.1S	26.3E	1354	S8	110	0	0	0	0.9	-5.4	5.5
68488	28.4S	31.1E	1279	S8	72	72	100	0	0.0	0.0	0.0
68752	32.8S	27.4E	524	S8	109	0	0	0	1.0	-8.3	8.4

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30320	56.9N	105.7E	669	MS	52	52	100	0	0.0	0.0	0.0
30554	54.5N	113.6E	995	MS	57	0	0	9	1.0	10.6	10.6
31253	54.7N	128.9E	357	MS	118	0	0	6	2.0	-4.6	5.0
35173	51.6N	69.8E	620	MS	57	57	100	0	0.0	0.0	0.0
40701	39.3N	44.4E	1470	MS	100	1	1	0	1.0	6.6	6.7
40743	36.2N	57.7E	941	MS	115	0	0	0	1.2	-5.3	5.4
40762	35.3N	59.2E	1333	MS	114	19	17	0	1.0	-13.5	13.5
40763	35.2N	58.5E	1060	MS	48	0	0	0	1.2	-5.9	6.0
40783	32.4N	49.7E	1972	MS	95	1	1	0	1.2	-5.3	5.4
40789	33.8N	55.1E	921	MS	89	0	0	0	1.4	8.0	8.1
40798	32.3N	50.9E	1991	MS	96	2	2	1	1.1	-7.4	7.5
40836	30.8N	51.7E	1880	MS	85	1	1	0	1.1	8.3	8.4
40859	29.0N	53.7E	1383	MS	92	0	0	0	1.0	9.1	9.2
41254	23.1N	57.7E	1755	S8	59	59	100	0	0.0	0.0	0.0
41396	16.0N	48.9E	700	MS	37	0	0	0	1.6	5.7	5.9
41466	13.7N	44.1E	1385	8	39	0	0	3	1.4	-6.2	6.4
44477	27.0N	87.4E	1445	S8	75	75	100	0	0.0	0.0	0.0
52602	38.8N	93.4E	2734	S	120	0	0	0	1.3	-4.8	5.0
56444	28.5N	98.9E	3488	S	113	113	100	0	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	117	1	1	0	2.0	7.9	8.1

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	39	1	3	0	1.5	-5.8	6.0
80315	3.0N	75.3W	443	MS	62	0	0	13	2.5	-4.2	4.9
82704	7.6S	72.7W	170	MS	64	0	0	0	1.3	-4.0	4.2
83214	10.3S	54.9W	285	MS	50	0	0	10	3.0	-5.8	6.5
83235	12.4S	46.4W	660	MS	66	0	0	2	1.5	6.6	6.8
83295	13.4S	39.9W	755	MS	41	0	0	78	0.7	-4.7	4.8
83319	14.7S	52.4W	315	MS	51	0	0	0	1.2	-4.3	4.5
83332	14.1S	46.4W	950	MS	65	29	45	0	0.8	13.9	13.9
83361	15.6S	56.1W	179	MS	67	0	0	0	1.4	4.2	4.4
83408	14.3S	43.8W	556	MS	69	0	0	0	1.3	10.2	10.3
83423	16.7S	49.3W	729	MS	69	0	0	0	1.1	-4.8	4.9
83488	17.8S	42.9W	1097	MS	68	68	100	0	0.0	0.0	0.0
83531	18.6S	46.5W	896	MS	66	0	0	2	1.3	-6.6	6.7
83587	19.9S	43.9W	850	MS	70	0	0	0	1.2	-7.9	8.0
83689	21.3S	43.8W	1171	MS	57	0	0	0	1.0	4.1	4.2

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83704	22.3S	53.9W	369	MS	52	0	0	0	4.2	-7.6	8.7
83773	23.1S	48.9W	793	S	36	0	0	0	1.0	-6.1	6.2
83836	25.5S	50.6W	837	MS	71	0	0	0	1.2	-4.3	4.5
83916	28.2S	51.5W	806	MS	72	1	1	1	1.3	-5.5	5.7
84401	5.2S	80.6W	55	MS	104	0	0	2	1.3	4.7	4.9
84455	6.5S	76.4W	282	MS	74	0	0	0	1.6	7.0	7.2
84472	7.1S	78.5W	2622	S	51	1	2	6	2.5	-5.6	6.1
84501	8.1S	79.0W	30	MS	101	1	1	9	1.3	5.3	5.5
84542	9.4S	77.6W	2760	S	42	0	0	0	1.6	4.6	4.9
84686	13.6S	72.0W	3249	S	111	0	0	4	1.8	-5.1	5.4
84782	18.1S	70.3W	469	MS	106	0	0	23	2.0	9.3	9.5
85141	14.5S	67.6W	202	MS	41	1	2	24	1.7	4.2	4.5
85312	19.8S	63.9W	992	S	36	2	6	0	1.9	-10.0	10.2
85406	18.3S	70.3W	58	M	119	0	0	4	1.6	7.2	7.4
85418	20.5S	70.2W	48	M	117	0	0	0	1.3	4.8	5.0
85442	23.4S	70.4W	135	M	119	0	0	0	1.3	4.4	4.6

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
76118	30.4N	109.7W	1040	MS	26	1	4	0	0.8	-11.2	11.2
76625	20.6N	100.4W	1813	MS	21	0	0	0	1.2	-7.4	7.5
76632	20.1N	98.7W	2417	MS	20	0	0	100	0.7	-4.7	4.8
76634	20.1N	98.4W	2135	MS	58	1	2	90	1.1	-4.4	4.5
76658	19.2N	103.7W	494	MS	31	0	0	3	1.4	5.9	6.1
76750	18.5N	88.3W	9	MS	66	0	0	0	1.1	-4.0	4.1
76762	17.5N	99.5W	1865	MS	47	47	100	0	0.0	0.0	0.0
76775	17.1N	96.7W	1550	MS	40	0	0	3	1.2	4.3	4.5
78627	15.3N	91.5W	1901	S	36	0	0	0	1.0	4.5	4.6

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94955	41.6S	145.7E	684	MS	219	219	100	0	0.0	0.0	0.0

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
02045	67.8N	20.4E	408	M	68	68	100	0	0.0	0.0	0.0
04313	80.6N	13.7W	10	MS	95	0	0	20	4.4	6.3	7.7
11024	48.4N	15.4E	860	S8	119	8	7	0	0.8	-13.6	13.6
16020	46.5N	11.3E	1461	MS	70	70	100	0	0.0	0.0	0.0
16227	41.9N	13.6E	655	MS	119	119	100	0	0.0	0.0	0.0
16549	39.1N	8.3E	12	MS	117	0	0	0	0.9	-4.5	4.6
16614	40.4N	21.3E	604	MS	58	0	0	2	1.0	-7.2	7.3

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89108	89.0S	0.3W	2754	S	30	9	30	40	3.5	7.6	8.4
89208	90.0S	0.0W	2835	M	50	10	20	28	3.6	6.3	7.3
89264	71.4S	68.9W	780	S	70	3	4	39	4.4	7.2	8.4
89324	80.0S	120.0W	1530	S	92	1	1	1	5.3	-4.9	7.2
89345	89.7S	148.8W	620	S	91	74	81	0	5.4	-8.4	10.0
89606	78.5S	106.9E	3490	S7	115	54	47	0	6.8	5.6	8.8
89744	74.0S	43.0E	3353	S	88	5	6	25	4.1	6.6	7.8
89774	73.4S	76.8E	2565	S	94	3	3	12	3.6	5.3	6.4
89828	74.5S	123.0E	3280	S	76	10	13	12	5.9	5.2	7.9
89860	74.2S	160.3E	1772	S	84	8	10	5	4.3	-7.1	8.3

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model

Observation times :All hours combined.

Level(s) monitored :70.0 - 500.0 hPa

Elements monitored :TEMP in °C ; WIND in $m\ s^{-1}$

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 $m\ s^{-1}$ Vector Wind

SELECTION CRITERIA :N REP ≥ 20

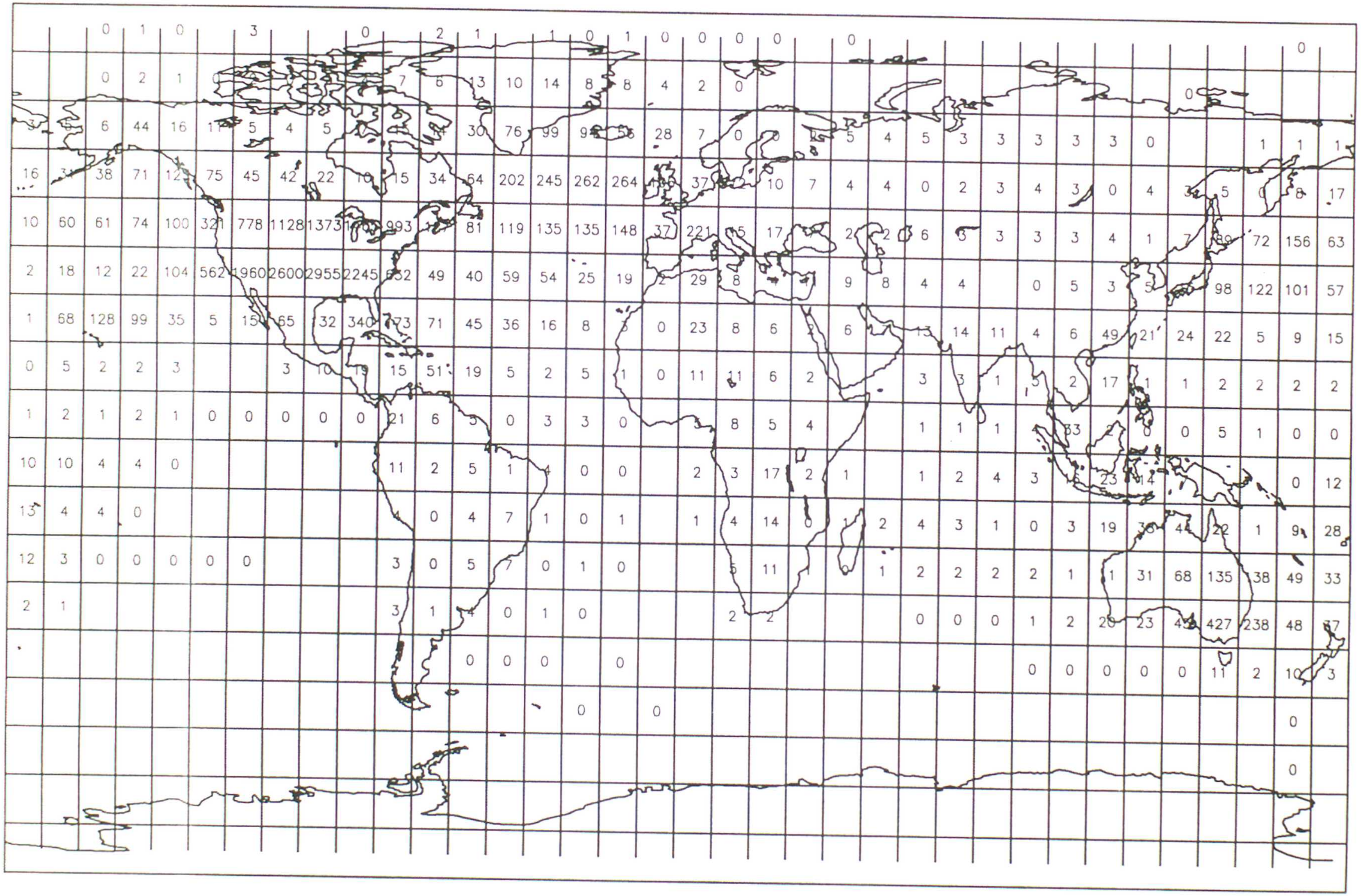
	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	133	3	10	2.4	0.3	131	6	77	2	16.1	-2.1
AAL	5135	0	1	1.8	0.2	5154	0	2	0	8.4	0.8
AAR	1985	1	1	1.7	-0.2	1966	0	2	0	8.4	1.0
ACA	2518	0	2	1.8	0.1	2554	0	1	0	7.5	0.7
ACI	44	11	14	2.2	1.5	40	0	5	0	11.7	0.4
AEA	921	1	100	2.6	1.0	905	0	4	0	9.4	1.5
AEL	579	1	3	1.5	-0.4	557	0	3	0	7.3	1.0
AEY	65	0	0	1.4	1.0	66	0	5	0	8.7	3.1
AFL	340	1	8	2.4	0.8	340	0	6	1	9.6	0.2
AFR	1610	1	6	1.9	0.2	1518	0	7	0	8.9	0.8
AIH	408	0	2	1.4	0.1	359	0	5	0	8.7	1.2
AJM	73	0	1	1.4	-0.3	58	0	5	0	9.5	1.4
AMT	450	2	58	3.2	2.1	426	0	3	0	7.8	0.8
AMX	304	0	1	1.5	0.2	306	0	2	0	7.8	1.4
ANA	1140	1	3	1.8	-0.3	1120	1	5	0	9.8	0.9
ANZ	2199	3	4	1.9	0.4	2134	0	2	0	8.2	0.8
AOM	568	2	4	1.7	0.9	501	0	4	0	7.7	1.2
ARP	143	3	6	2.2	1.3	141	0	7	4	7.6	0.8
ASY	21	0	5	2.4	1.7	21	0	0	0	6.7	1.2
AUA	38	0	3	1.6	-0.9	38	0	3	0	8.2	2.8
AVA	437	1	3	1.6	0.3	421	0	4	0	8.9	0.9
AVN	40	5	5	1.5	0.8	39	0	3	0	9.7	1.3
AXA	78	4	4	3.2	2.2	79	0	1	1	9.6	1.8
AZA	542	1	6	1.9	0.1	521	0	5	0	9.2	0.5
BAL	922	1	7	1.6	-0.2	906	0	8	0	8.1	1.8
BAW	1579	0	9	1.9	0.1	1557	0	10	0	8.2	0.9
BBB	32	0	0	1.2	-0.5	30	0	0	0	7.7	1.4
BWA	273	1	100	3.9	3.1	264	0	5	0	8.1	1.3
CAL	1860	0	1	1.6	0.0	1851	0	2	0	8.0	0.8
CCA	139	1	8	2.8	0.1	129	1	100	0	10.7	-0.5
CDN	2111	0	1	1.8	0.2	2092	0	2	0	8.3	0.5
CES	365	0	1	1.8	0.2	356	1	5	0	10.3	0.2
CFC	33	0	18	1.8	0.1	31	0	23	0	9.2	2.4
CFG	1207	0	1	1.7	-0.8	1205	0	2	0	7.6	0.7
CKS	226	4	6	2.6	1.9	209	0	3	0	6.8	1.2
CKT	280	0	3	1.7	0.9	266	0	6	1	10.0	1.2
CLX	338	0	1	1.9	-0.2	334	0	2	0	7.2	0.8
CMI	664	0	2	1.8	0.6	638	0	5	2	7.5	1.8
CMM	479	0	1	1.9	0.0	481	0	2	0	7.9	0.7
COA	1475	1	3	1.8	0.6	1477	0	4	0	8.8	1.2
CPA	40	3	5	1.9	-0.6	36	0	0	0	8.7	2.1
CRL	502	1	4	1.8	0.7	469	0	5	0	9.0	1.5
CSA	33	3	3	1.8	-0.9	33	0	3	0	6.6	-0.5
CSN	75	3	4	2.1	0.3	72	0	4	0	11.4	2.2
CTB	257	0	1	1.6	0.1	257	0	3	0	9.2	1.7
CTM	37	8	22	3.6	-0.7	36	0	94	0	13.3	0.0
CUB	558	3	6	2.3	1.3	534	0	7	0	9.4	2.1
DAL	5562	0	2	1.9	0.5	5614	0	2	0	7.8	0.6
DHL	200	5	100	3.2	-0.5	200	0	8	2	10.7	0.7
DLH	3901	0	8	2.0	0.1	3910	0	10	2	7.7	0.8
DOA	43	5	5	2.7	-0.6	42	0	7	0	10.3	2.2
EIA	202	1	4	1.7	0.4	200	0	6	1	8.5	0.2
EIN	44	0	5	2.1	-0.1	52	0	15	0	14.0	0.6
ELY	154	1	8	1.8	-0.1	156	1	5	0	8.6	0.5
EVA	1712	0	1	1.8	-0.4	1697	0	3	0	8.7	0.7
EWW	119	3	40	3.0	1.7	120	1	100	0	11.4	1.9
FDX	1065	1	2	1.6	0.6	1077	0	3	0	8.9	0.5
FIN	408	0	1	2.0	0.4	409	0	2	1	8.2	0.8
FJI	476	7	7	1.6	0.9	446	0	3	0	9.1	1.4

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FOM	141	5	4	2.2	0.2	138	0	1	0	8.2	1.4
GAF	117	0	0	1.7	-0.3	113	0	1	0	7.3	0.7
GCO	29	0	0	1.6	0.4	29	0	0	0	8.0	-0.4
GHA	71	0	0	1.1	0.5	41	0	0	0	6.5	1.8
GIA	177	2	3	1.8	0.9	145	0	74	1	7.4	1.8
GTI	59	0	14	3.3	1.7	63	0	2	0	11.4	-2.4
HAL	1580	0	1	1.4	0.3	1547	0	2	0	8.4	1.1
HLF	179	0	2	1.6	-0.7	180	0	4	0	7.8	1.3
HRH	55	5	7	2.1	1.2	52	0	2	0	7.3	1.0
IBE	3088	1	9	1.9	0.9	3082	0	11	0	8.4	1.0
ICE	762	0	1	1.9	0.2	759	0	1	0	7.8	-0.2
JAA	26	0	0	1.8	1.4	26	0	4	0	12.8	0.9
JAL	6402	0	1	1.7	0.3	6350	0	2	1	8.0	1.1
JAZ	83	0	0	1.7	1.4	83	0	1	1	7.3	1.2
KAL	3750	1	2	1.8	-0.1	3658	0	3	0	9.0	0.8
KIW	45	9	9	4.1	3.4	42	0	0	0	11.5	-0.6
KLM	3092	0	2	1.7	0.3	3091	0	3	0	7.9	1.0
LDA	218	0	4	1.8	-0.9	220	0	5	0	7.9	0.0
LDI	480	1	15	2.3	-0.1	480	0	17	0	9.4	1.0
LIB	265	0	2	1.4	0.9	250	0	4	0	8.8	1.5
LKR	49	0	0	1.5	0.9	51	0	0	0	6.5	0.6
LOT	377	0	2	2.3	-0.9	376	0	3	0	9.0	-0.4
LTU	824	0	3	1.5	0.2	807	0	5	0	7.8	1.0
MAS	309	0	1	1.6	-0.2	255	0	2	0	8.3	0.4
MDA	205	0	1	1.6	0.4	207	0	1	0	8.4	-0.8
MON	46	2	2	1.7	0.8	34	0	0	0	5.7	0.9
MPD	322	1	4	2.1	0.9	310	0	2	0	6.7	1.1
MPH	1015	1	2	1.8	-0.3	1029	0	3	0	8.3	0.9
NCA	633	0	1	1.8	0.4	627	0	3	0	8.7	0.8
NWA	10566	1	2	1.8	0.5	10586	0	2	1	8.2	0.8
PAC	153	3	8	2.1	0.7	147	0	1	0	7.4	1.3
PAL	965	1	1	1.7	0.0	934	0	3	1	8.2	1.0
PAO	209	1	3	1.8	0.3	207	0	2	0	6.9	0.1
QFA	1359	1	5	1.9	0.4	1338	1	5	0	9.3	0.5
RAF	184	1	2	2.1	0.9	181	0	1	0	8.7	0.4
RAM	69	0	4	2.0	-0.6	69	0	7	0	10.9	1.5
RCH	342	2	96	2.6	0.8	329	1	96	0	10.6	2.5
RJA	94	0	2	2.1	1.2	94	0	7	0	11.3	-0.6
RKA	165	0	1	1.5	-0.2	113	0	4	0	8.0	1.5
RON	20	0	0	0.9	0.1	20	0	5	0	7.5	2.1
ROY	398	1	2	2.0	0.0	409	0	3	0	8.5	0.3
RRR	104	1	19	2.2	0.0	104	0	19	0	10.4	1.8
SAA	291	1	2	1.9	-0.3	256	0	3	0	7.7	0.7
SAB	30	0	10	2.4	-0.8	30	0	7	0	10.4	1.4
SAS	1349	0	1	2.0	0.1	1345	0	2	0	8.2	0.5
SCX	231	0	0	1.3	0.7	196	0	1	0	5.9	0.3
SHE	27	4	7	3.5	2.9	27	0	4	0	6.1	1.0
SIA	1288	0	2	1.8	-0.5	1266	0	3	0	8.5	0.6
SJM	42	2	7	3.6	1.1	34	0	3	0	13.3	4.4
SLR	151	1	16	1.6	-0.4	154	0	16	0	9.0	0.3
SOL	41	5	7	1.8	0.1	40	0	3	0	10.7	1.3
SPP	236	0	2	1.5	0.5	232	0	4	0	7.0	0.8
SSV	134	0	2	2.0	0.0	137	0	0	0	6.9	-0.4
SVA	145	1	9	2.0	-0.1	154	0	100	0	13.7	2.2
SWR	162	1	4	1.6	0.1	166	0	5	0	9.1	1.5
TAP	786	1	4	1.6	-0.1	764	0	5	0	8.9	1.3
THA	453	1	2	1.6	-0.6	432	0	3	0	8.7	0.4
TOW	195	0	3	1.6	-0.1	198	1	5	0	9.6	-0.4
TSC	167	1	4	2.2	1.1	167	0	2	0	8.3	1.4

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
TWA	2134	0	3	2.0	0.4	2146	0	3	0	8.2	1.3
UAL	11890	0	3	1.9	0.2	11867	0	2	0	7.5	0.9
ULE	327	0	2	1.6	0.4	320	0	2	0	7.0	0.5
UPS	728	0	6	1.8	0.4	726	0	7	0	8.3	1.0
USA	410	1	2	2.1	0.3	415	0	2	0	8.5	1.7
VIR	216	0	3	1.9	-0.2	223	0	3	0	8.2	0.8
VKG	71	0	1	2.0	0.8	68	0	1	0	11.2	1.3
VPB	30	0	0	2.0	1.3	24	0	4	0	8.1	1.4
VRG	78	3	3	1.5	0.5	78	0	4	0	10.1	0.7
VSP	247	0	0	1.8	0.8	244	0	3	0	10.8	0.7
WOA	118	2	8	2.0	0.9	122	0	7	0	8.0	0.9
AN	25364	0	0	1.4	0.2	25196	0	0	0	6.2	1.0
BA	15346	0	0	1.2	0.4	15304	0	4	0	6.7	1.2
FJ	36	8	14	1.5	1.0	36	0	8	0	5.6	1.1
IT	396	0	0	0.7	0.1	396	0	0	0	5.2	-0.2
KL	10802	0	20	1.2	0.6	10796	0	23	0	6.2	0.9
LH	2609	0	1	1.5	0.2	2591	0	2	1	6.2	0.9
MK	1225	0	1	1.4	1.0	1209	0	0	0	7.3	2.2
QF	9223	0	0	1.2	0.3	9220	0	0	0	5.9	0.9
SA	3410	0	0	1.2	0.7	3410	0	0	0	7.0	1.5
SV	236	98	98	1.9	1.8	236	0	45	0	19.1	6.8
N	693	3	4	2.5	0.8	660	0	4	0	9.7	1.2
U	471603	0	1	1.1	0.1	470475	0	2	0	5.9	0.8

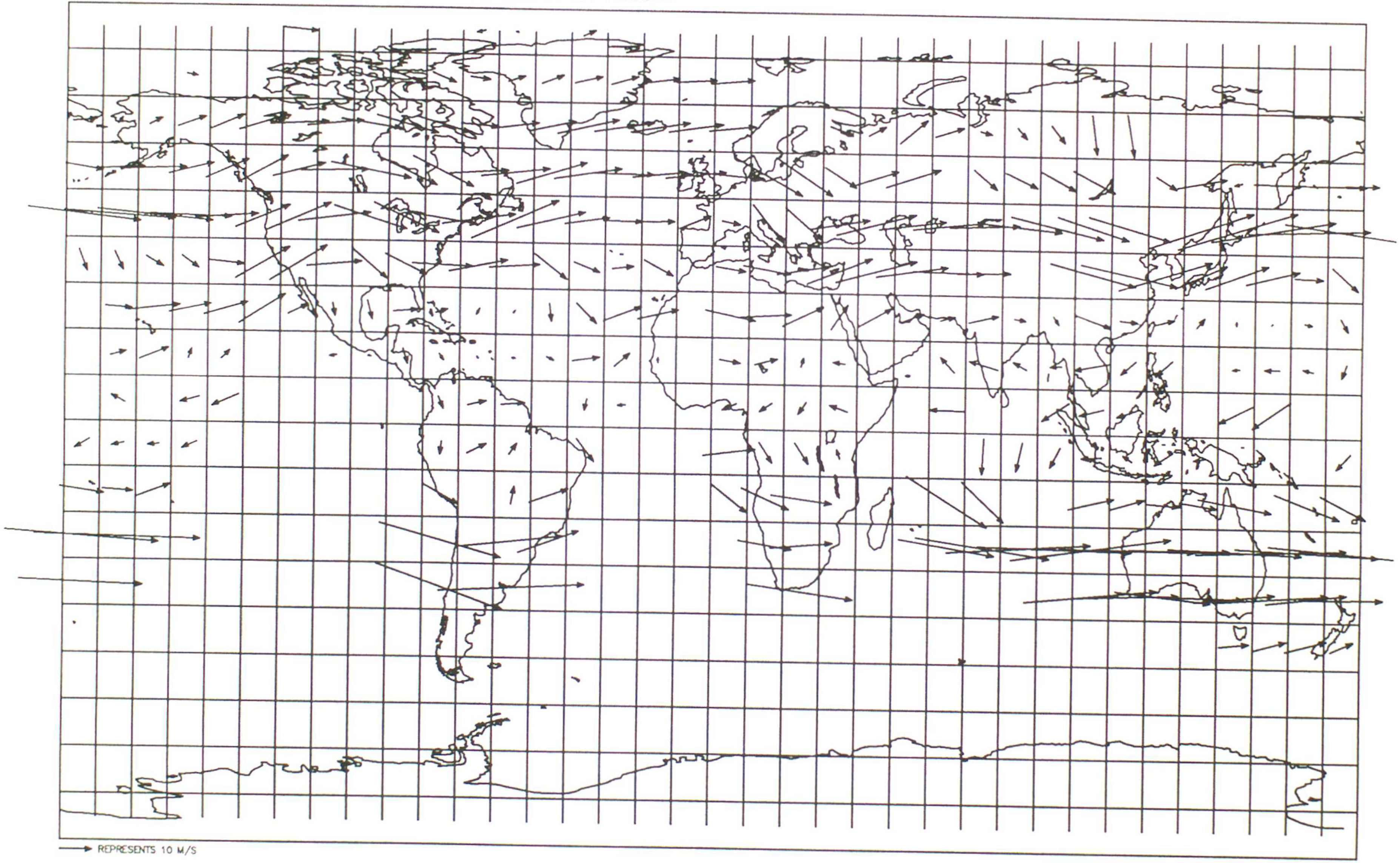
MEAN DAILY COUNT OF AIRCRAFT 70 - 500 HPA
SEPTEMBER 1997
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

FIGURE 3


0 1 0 3 0 2 1 1 0 1 0 0 0 0 0 0
0 2 1 0 7 6 13 10 14 8 8 4 2 0
0
3 5 6 44 16 17 5 4 5 14 30 76 99 94 56 28 7 0 0 2 5 4 5 3 3 3 3 3 0 1 1 1
16 3 38 71 12 75 45 42 22 10 15 34 64 202 245 262 264 135 37 2 10 7 4 4 0 2 3 4 3 0 4 3 5 0 8 17
10 60 61 74 100 321 778 1128 1373 1000 993 17 81 119 135 135 148 37 221 15 17 2 2 6 3 3 3 3 4 1 7 89 72 156 63
2 18 12 22 104 562 1960 2600 2955 2245 632 49 40 59 54 25 19 2 29 8 9 8 4 4 0 5 3 5 98 122 101 57
1 68 128 99 35 5 15 65 32 340 173 71 45 36 16 8 5 0 23 8 6 2 6 13 14 11 4 6 49 21 24 22 5 9 15
0 5 2 2 3 3 10 19 15 51 19 5 2 5 1 0 11 11 6 2 3 3 1 5 2 17 1 1 2 2 2 2
1 2 1 2 1 0 0 0 0 0 21 6 5 0 3 3 0 3 8 5 4 1 1 1 4 33 2 0 0 5 1 0 0
10 10 4 4 0 11 2 5 1 4 0 0 2 3 17 2 1 1 2 4 3 13 23 14 0 12
13 4 4 0 4 0 4 7 1 0 1 1 4 14 0 1 2 4 3 1 0 3 19 36 44 22 1 9 28
12 3 0 0 0 0 0 3 0 5 7 0 1 0 5 11 1 0 1 2 2 2 2 1 1 31 68 135 38 49 33
2 1 3 1 4 0 1 0 2 2 0 0 0 1 2 20 23 43 427 238 48 37
0 0 0 0 0 0 0 0 0 11 2 10 3
0 0
0
0

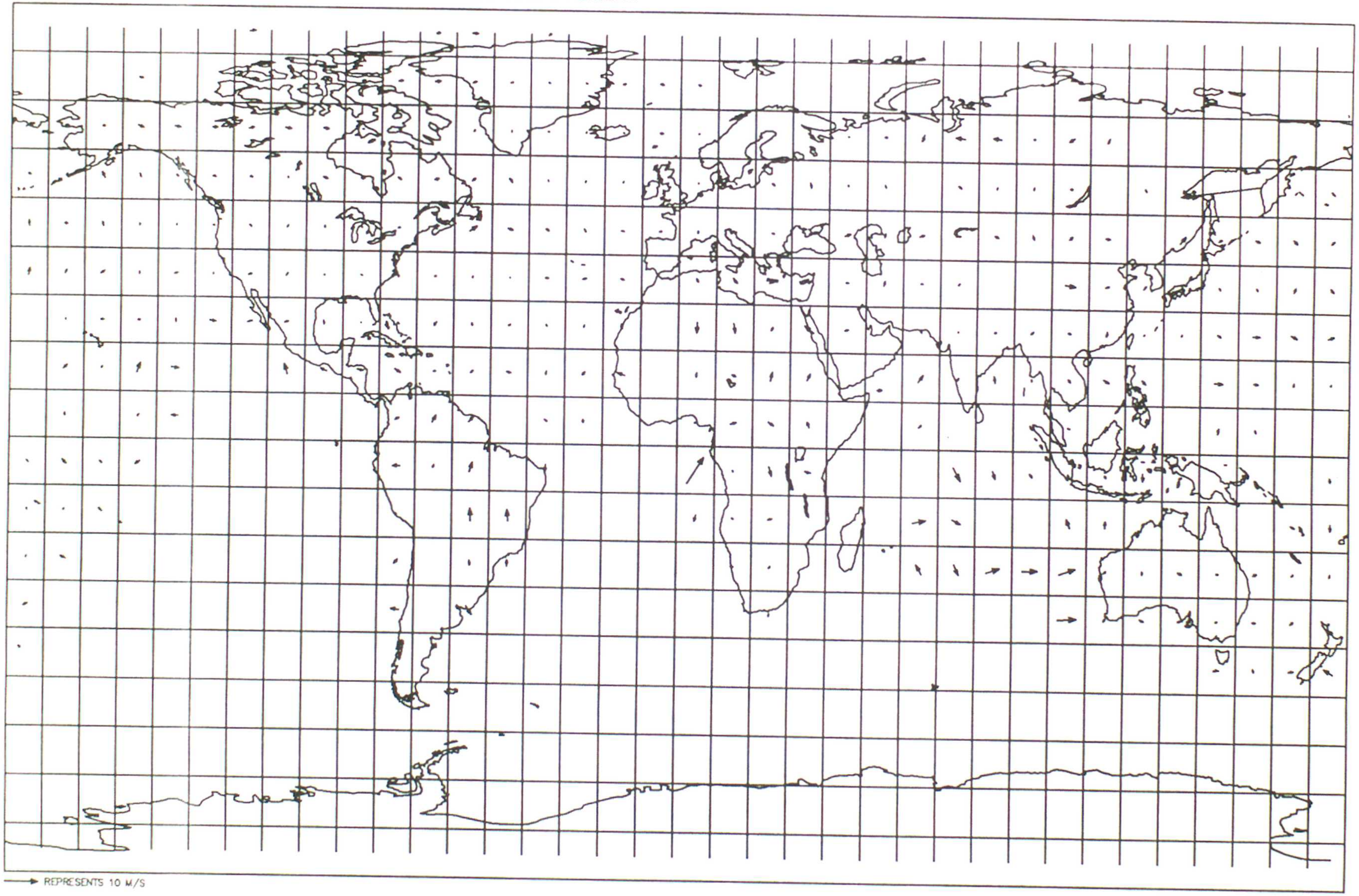
AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA
SEPTEMBER 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 4

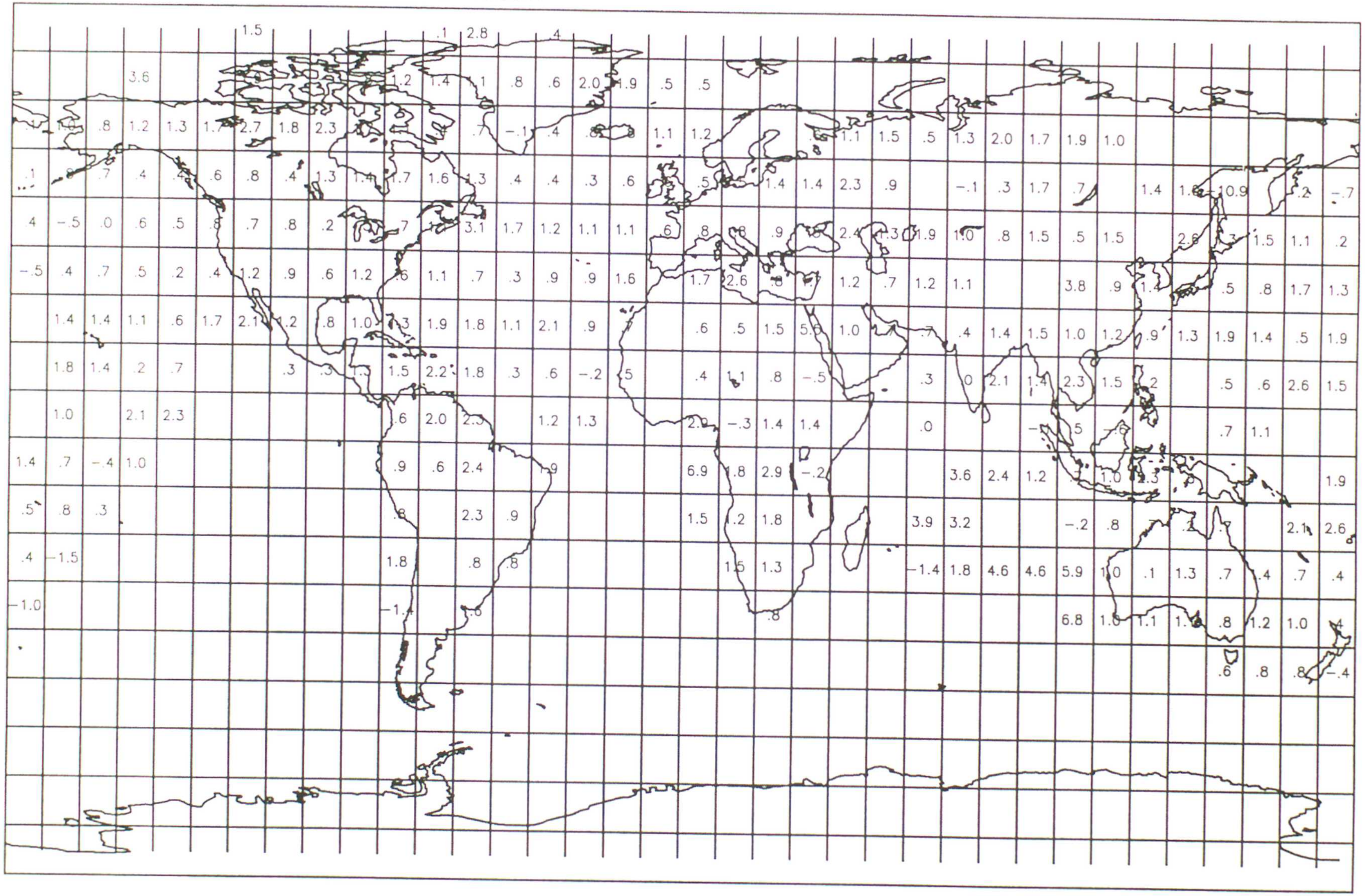


AIRCRAFT MEAN O-B WINDS BETWEEN 70 AND 500 HPA
SEPTEMBER 1997
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 5



AIRCRAFT : MEAN O-B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
SEPTEMBER 1997
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


1.5 .1 2.8 .4
3.6 1.2 1.4 1.1 .8 .6 2.0 1.9 .5 .5
.1 1.0 .8 1.2 1.3 1.7 2.7 1.8 2.3 .7 −.1 .4 .8 1.1 1.2 1.1 1.5 .5 1.3 2.0 1.7 1.9 1.0
.1 .8 .7 .4 .4 .6 .8 .4 1.3 1.4 1.7 1.6 1.3 .4 .4 .3 .6 .5 1.4 1.4 2.3 .9 −.1 .3 1.7 .7 1.4 1.6 10.9 .2 −.7
.4 −.5 .0 .6 .5 .8 .7 .8 .2 .7 3.1 1.7 1.2 1.1 1.1 .6 .8 .8 .9 2.4 1.3 1.9 1.0 .8 1.5 .5 1.5 2.6 1.5 1.1 .2
−.5 .4 .7 .5 .2 .4 1.2 .9 .6 1.2 .6 1.1 .7 .3 .9 .9 1.6 1.7 2.6 .8 1.2 .7 1.2 1.1 3.8 .9 1.4 .5 .8 1.7 1.3
1.4 1.4 1.1 .6 1.7 2.1 1.2 .8 1.0 1.3 1.9 1.8 1.1 2.1 .9 .6 .5 1.5 5.6 1.0 .7 .7 .4 1.4 1.5 1.0 1.2 .9 1.3 1.9 1.4 .5 1.9
1.8 1.4 .2 .7 .3 .3 1.5 1.5 2.2 1.8 .3 .6 −.2 .5 .4 1.1 .8 −.5 .3 0 2.1 1.4 2.3 1.5 2 .5 .6 2.6 1.5
1.0 2.1 2.3 .6 2.0 2.3 1.2 1.3 2.0 −.3 1.4 1.4 .0 .5 −.6 .7 1.1
1.4 .7 −.4 1.0 .9 .6 2.4 1.9 6.9 1.8 2.9 −.2 3.6 2.4 1.2 1.0 2.3 1.9
.5 .8 .3 .8 2.3 .9 1.5 1.2 1.8 3.9 3.2 −.2 .8 .2 2.1 2.6
.4 −1.5 1.8 .8 .8 1.5 1.3 −1.4 1.8 4.6 4.6 5.9 1.0 .1 1.3 .7 .4 .7 .4
−1.0 −1.4 .6 .8 6.8 1.0 1.1 1.1 .8 1.2 1.0 .4
.6 .8 .8 −.4

AIRCRAFT : RMS O-B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
SEPTEMBER 1997
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

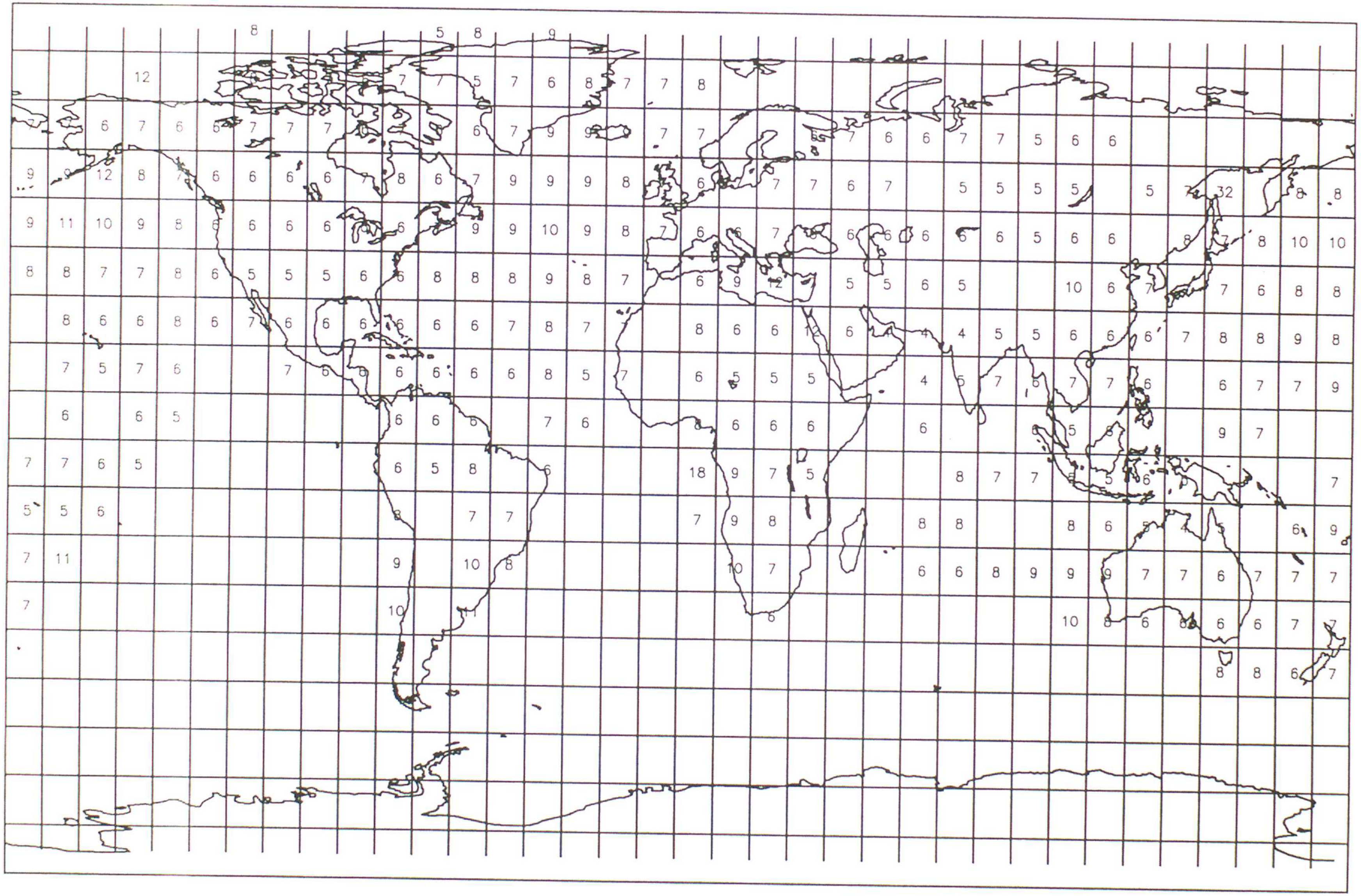


TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
17220	12	Z	50	38/ 27	25	0	120.7	139.1	184.2	8
42027	12	Z	100	34/ 75	18	1	126.0	-21.5	127.9	6
42101	12	Z	100	30/ 76	19	0	79.1	109.3	135.0	5
42314	00	Z	300	27/ 95	17	0	58.8	-67.2	89.3	5
42314	12	Z	250	27/ 95	21	0	51.2	-61.3	79.8	6
42339	00	Z	250	26/ 73	19	0	79.5	-57.8	98.3	8
42339	12	Z	100	26/ 73	24	0	111.5	90.0	143.3	7
42361	00	Z	70	26/ 78	17	2	138.1	5.0	138.2	5
42369	12	Z	200	27/ 81	25	0	75.7	57.8	95.2	8
42397	00	Z	70	27/ 88	17	0	171.4	9.6	171.7	11
42397	12	Z	70	27/ 88	11	0	137.9	-5.5	138.0	10
42492	00	Z	150	26/ 85	12	0	58.9	-65.5	88.1	4
42492	12	Z	150	26/ 85	13	0	93.6	-96.5	134.5	8
42647	12	Z	70	23/ 73	13	0	115.7	77.2	139.1	5
42667	12	Z	70	23/ 77	10	0	144.2	64.4	157.9	5
42867	00	Z	30	21/ 79	13	0	110.7	196.8	225.8	7
42867	12	Z	50	21/ 79	16	0	171.3	114.2	205.9	9
42971	12	Z	150	20/ 86	26	0	90.9	-30.7	95.9	4
43003	12	Z	150	19/ 73	15	2	63.3	139.5	153.2	5
43128	00	Z	100	17/ 78	24	0	96.5	-74.0	121.6	7
43128	12	Z	50	17/ 78	17	0	171.0	-43.2	176.4	8
43192	00	Z	50	15/ 74	13	0	74.0	-148.3	165.7	4
43192	12	Z	150	15/ 74	20	0	71.3	75.3	103.7	6
43279	00	Z	150	13/ 80	27	0	88.7	24.3	92.0	4
43279	12	Z	70	13/ 80	16	0	139.7	54.4	150.0	5
43285	12	Z	150	13/ 75	15	1	39.4	97.8	105.4	5
43311	12	Z	150	11/ 73	12	1	89.2	-14.8	90.4	4
43333	00	Z	50	12/ 93	15	0	146.1	-66.9	160.7	8
43333	12	Z	50	12/ 93	11	0	173.0	61.8	183.7	6
43346	00	Z	50	11/ 80	16	2	70.9	-298.1	306.4	10
43346	12	Z	50	11/ 80	24	0	96.1	-185.6	209.0	9
43369	12	Z	70	8/ 73	13	1	100.3	168.6	196.2	7
43371	00	Z	50	8/ 77	17	2	109.1	-250.4	273.1	8
43371	12	Z	50	8/ 77	21	0	105.4	-111.9	153.7	4
53772	00	Z	200	38/ 113	29	0	23.5	82.6	85.8	5
54135	00	Z	250	44/ 122	30	0	33.8	69.4	77.2	6
54337	12	Z	70	41/ 121	11	1	136.6	67.8	152.5	4
54497	00	Z	250	40/ 124	24	1	70.6	75.7	103.5	10
54497	12	Z	150	40/ 124	26	0	58.8	97.2	113.6	8
55591	12	Z	100	30/ 91	21	0	76.4	116.8	139.6	6
57036	00	Z	200	34/ 109	29	0	25.9	83.8	87.7	4
57127	00	Z	200	33/ 107	30	0	22.5	81.3	84.4	4
57127	12	Z	100	33/ 107	28	0	33.5	116.6	121.3	4
57679	00	Z	100	28/ 113	26	0	45.9	123.6	131.8	4
57957	00	Z	100	25/ 110	27	0	38.0	136.2	141.4	4
57957	12	Z	100	25/ 110	27	1	35.9	139.1	143.7	5
58203	12	Z	100	33/ 116	24	0	57.4	101.9	117.0	4
58606	00	Z	150	29/ 116	29	0	36.4	104.6	110.8	5
61902	12	Z	70	-8/ -14	16	0	98.0	190.2	213.9	6
61996	12	Z	1000	-38/ 78	28	0	31.8	-9.9	33.3	4
62010	12	Z	850	33/ 13	20	0	39.1	-28.0	48.1	4
62306	12	Z	150	31/ 27	24	0	91.3	76.7	119.2	5
62414	12	Z	30	24/ 33	14	3	109.3	238.4	262.3	6
63450	12	Z	700	9/ 39	18	0	8.2	75.7	76.1	8
85934	00	Z	300	-53/ -71	26	0	41.6	73.2	84.2	5
85934	12	Z	300	-53/ -71	29	0	43.3	69.9	82.2	4
89022	12	Z	150	-75/ -27	6	19	75.5	-181.2	196.3	10
89542	00	Z	100	-68/ 46	28	0	76.9	126.2	147.8	6
89664	00	Z	150	-78/ 167	11	0	66.6	105.3	124.6	9
96163	00	Z	150	-1/ 100	17	0	104.3	2.5	104.4	5
96237	00	Z	200	-2/ 106	19	0	87.6	-48.9	100.3	6

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – SEPTEMBER 1997 FIGURE 8
ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1378

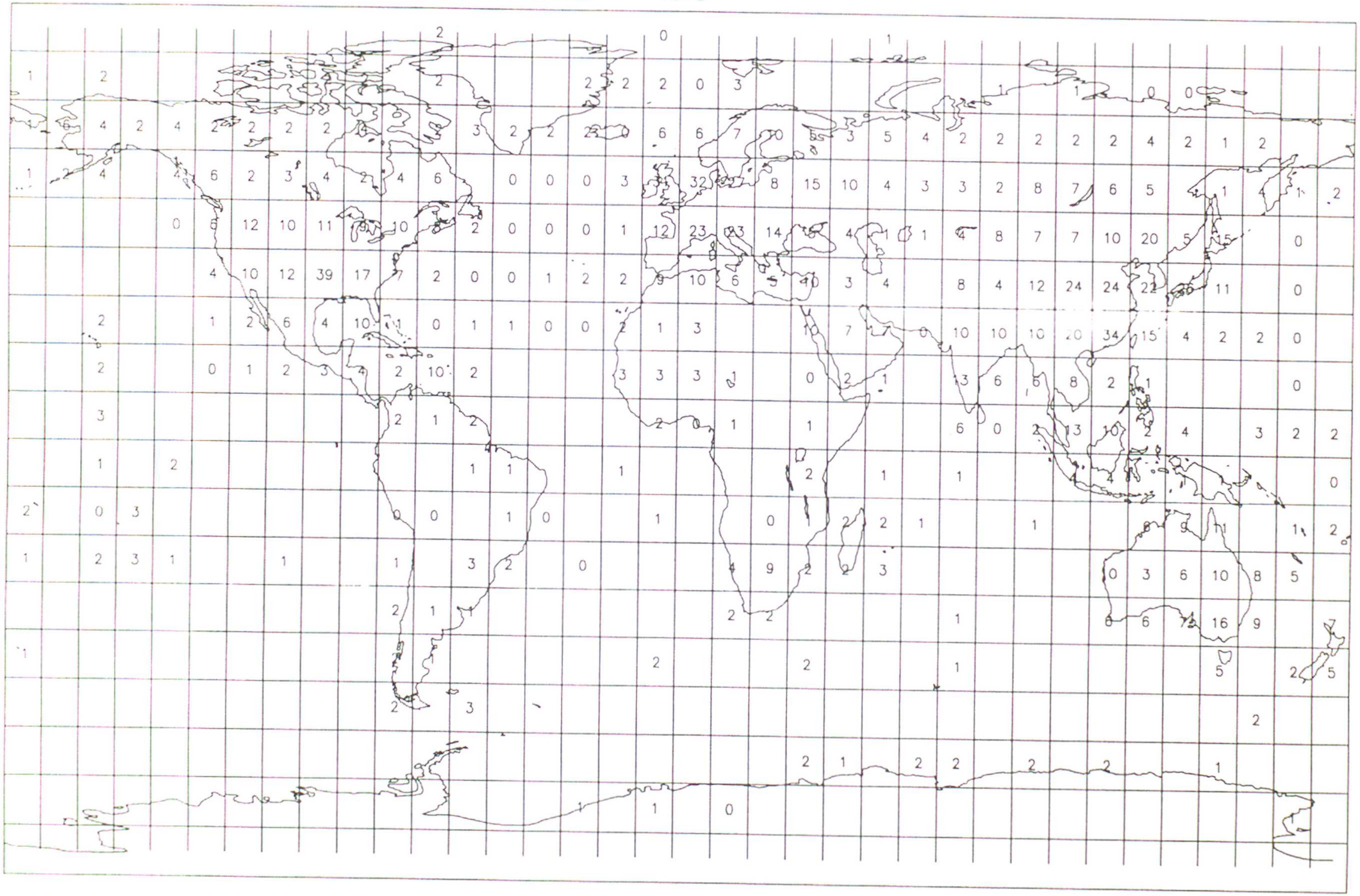

2 0 1
1 2 2 2 2 2 0 3 1 1 0 0
6 4 2 4 2 2 2 2 6 3 2 2 23 6 6 7 10 55 3 5 4 2 2 2 2 2 4 2 1 2
1 2 4 4 6 2 3 4 2 4 6 0 0 0 3 3 32 8 15 10 4 3 3 2 8 7 6 5 1 4 1 2
0 6 12 10 11 9 10 2 0 0 0 1 12 23 23 14 15 4 1 1 4 8 7 7 10 20 5 15 0
4 10 12 39 17 7 2 0 0 1 2 2 9 10 6 5 40 3 4 8 4 12 24 24 22 30 11 0
2 1 2 6 4 10 1 0 1 1 0 0 2 1 3 10 7 7 0 10 10 10 20 34 15 4 2 2 0
2 0 1 2 3 4 2 10 2 3 3 3 1 0 2 1 3 6 6 8 2 1 0
3 2 1 2 2 0 1 1 6 0 2 13 10 2 4 3 2 2
1 2 1 1 1 2 1 1 4 0
2 0 3 0 0 1 0 1 0 1 2 2 1 1 8 9 11 1 2
1 2 3 1 1 1 3 2 0 4 9 2 2 3 0 3 6 10 8 5
2 1 1 2 2 1 0 6 7 16 9
1 2 2 1 5 2 7 5
2 3 2
2 1 2 2 2 2 1
1 1 0 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
60571	00	V	200	32/ -2	11	0	9	6.4	-3.1	15.1	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – SEPTEMBER 1997 FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1231

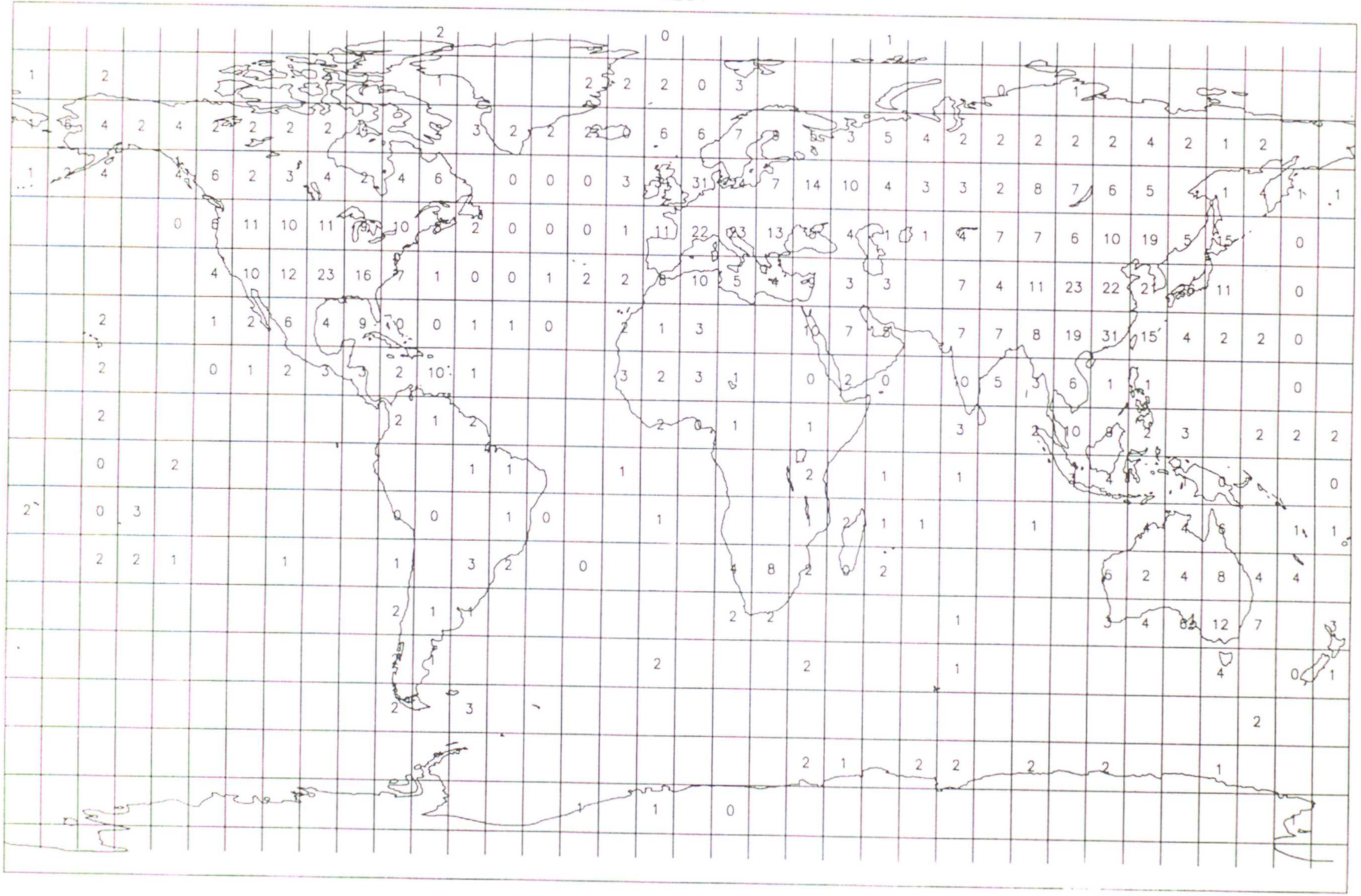

2 0 1
1 2 1 2 2 2 0 3 0 1
1 6 4 2 4 2 2 2 2 3 2 2 23 0 6 6 7 8 55 3 5 4 2 2 2 2 2 4 2 1 2
1 2 4 4 6 2 3 4 2 4 6 0 0 0 3 3 31 24 7 14 10 4 3 3 2 8 7 6 5 1 4 1 1
0 6 11 10 11 9 10 2 0 0 0 1 11 22 23 13 5 4 1 1 4 7 7 6 10 19 5 15 0
4 10 12 23 16 7 1 0 0 1 2 2 8 10 5 4 9 3 3 7 4 11 23 22 21 11 0
2 1 2 6 4 9 10 0 1 1 0 2 1 3 10 7 8 7 7 8 19 31 15 4 2 2 0
2 0 1 2 3 3 2 10 1 3 2 3 1 0 2 0 10 5 3 6 1 1 0
2 2 1 2 2 0 1 1 3 2 10 8 2 3 2 2 2
0 2 1 1 1 2 1 1 4 0
2 0 3 0 0 1 0 1 1 2 1 1 1 4 4 6 1 1
2 2 1 1 1 3 2 0 4 8 2 0 2 6 2 4 8 4 4
2 1 1 2 2 1 3 4 12 7 3
1 2 2 1 4 0 1
2 3 2
2 1 2 2 2 2 1
1 1 1 0

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for radiosonde TEMPs.
Area monitored	:90°N - 90°S, 180°W - 180°E.
Standard of comparison	:Background field from Bracknell global model.
Observation times	:00 UTC and 12 UTC.
Level(s) monitored	:Standard levels between 500.0 - 150.0 hPa
Element monitored	:WIND DIRECTION in degrees

Parameters monitored

:NUM OBS	:Average number of observations at all levels.
:BIAS	:Mean difference of observations from background values from all levels.
:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
15120	00	DD	47/ 24	7	11.7	9.5	23.9
17280	00	DD	38/ 40	27	-11.4	2.3	10.9
43003	00	DD	19/ 73	11	11.1	7.0	22.8
43285	00	DD	13/ 75	12	10.6	6.2	17.7
43369	00	DD	8/ 73	13	26.2	4.0	16.2
45004	12	DD	22/ 114	16	11.2	8.3	24.6
48407	00	DD	15/ 105	16	-16.2	7.3	21.3
54292	12	DD	43/ 129	29	11.0	2.0	21.1
59265	12	DD	23/ 111	19	11.6	7.4	18.7
59280	12	DD	24/ 113	18	15.5	8.0	18.3
59431	00	DD	23/ 108	18	10.0	4.9	16.9
62337	00	DD	31/ 34	14	-23.2	4.2	9.0
62337	12	DD	31/ 34	26	-22.1	2.0	8.7
67083	00	DD	-19/ 47	15	13.1	3.1	12.8
67083	12	DD	-19/ 47	17	12.3	4.8	14.2
71043	00	DD	65/-127	25	10.0	4.6	13.7
71043	12	DD	65/-127	22	10.2	5.4	16.3
76644	00	DD	21/ -90	15	-11.3	9.4	27.2
96441	00	DD	3/ 113	18	11.3	5.1	15.6
96481	12	DD	4/ 118	22	-15.8	5.0	24.7

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: September, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES, METEOSAT, GMS, INSAT.

Standard of comparison :Background field from Bracknell global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

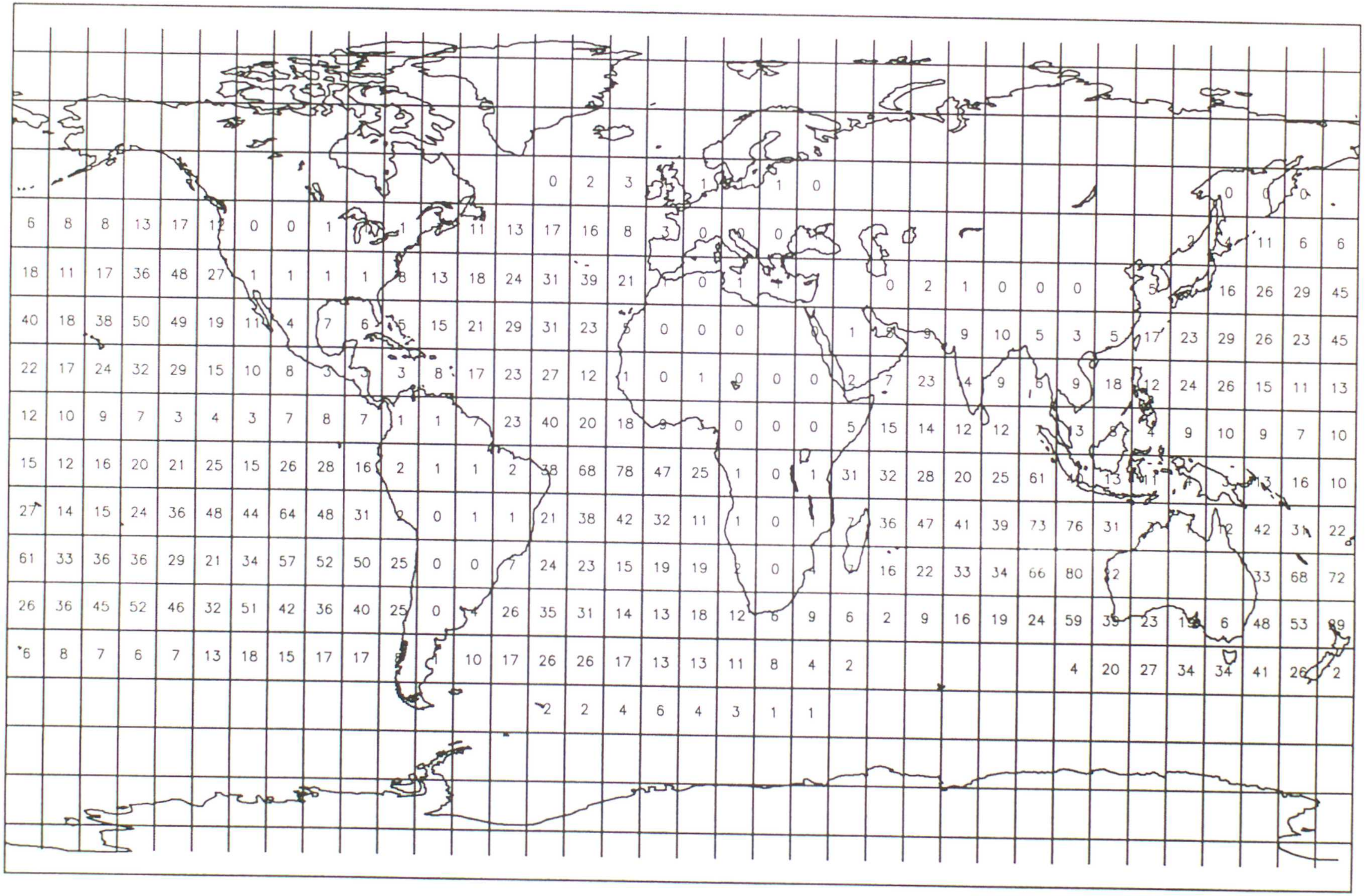
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

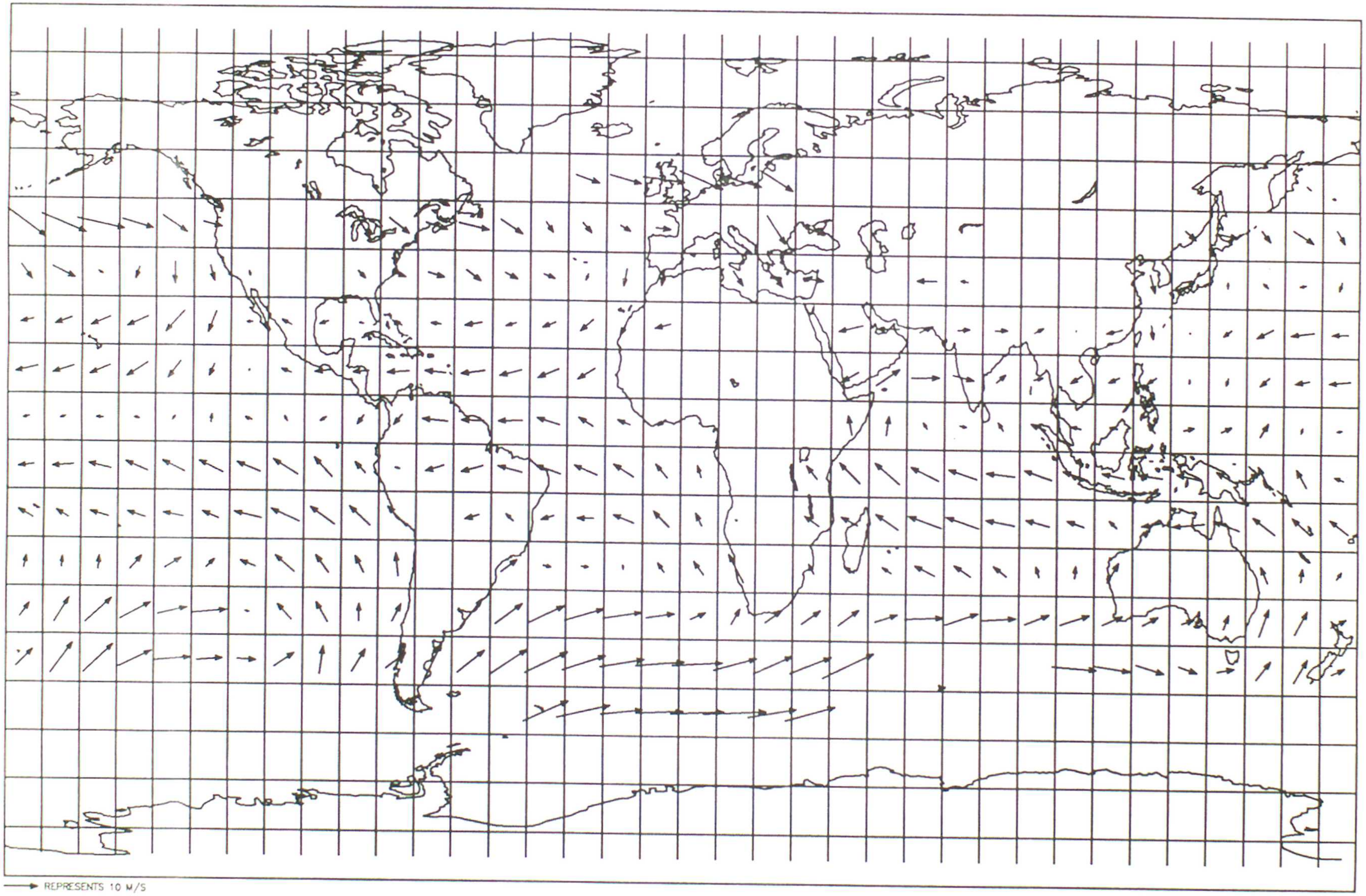
:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
SEPTEMBER 1997


0 2 3 1 1 0 0 0 0
6 8 8 13 17 12 0 0 1 1 11 13 17 16 8 3 0 0 0 2 4 11 6 6
18 11 17 36 48 27 1 1 1 1 8 13 18 24 31 39 21 0 1 0 2 1 0 0 0 5 16 26 29 45
40 18 38 50 49 19 11 4 7 6 5 15 21 29 31 23 5 0 0 0 0 1 8 9 9 10 5 3 5 17 23 29 26 23 45
22 17 24 32 29 15 10 8 3 3 3 8 17 23 27 12 1 0 1 0 0 0 2 7 23 4 9 6 9 18 12 24 26 15 11 13
12 10 9 7 3 4 3 7 8 7 1 1 7 23 40 20 18 9 0 0 0 5 15 14 12 12 1 13 8 4 9 10 9 7 10
15 12 16 20 21 25 15 26 28 16 2 1 1 2 38 68 78 47 25 1 0 1 31 32 28 20 25 61 40 13 11 13 16 10
27 14 15 24 36 48 44 64 48 31 2 0 1 1 21 38 42 32 11 1 0 1 7 36 47 41 39 73 76 31 7 2 42 31 22
61 33 36 36 29 21 34 57 52 50 25 0 0 7 24 23 15 19 19 2 0 4 7 16 22 33 34 66 80 2 33 68 72
26 36 45 52 46 32 51 42 36 40 25 0 4 26 35 31 14 13 18 12 6 9 6 2 9 16 19 24 59 39 23 19 6 48 53 89
6 8 7 6 7 13 18 15 17 17 8 1 10 17 26 26 17 13 13 11 8 4 2 4 20 27 34 34 41 26 2
2 2 4 6 4 3 1 1

SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA
SEPTEMBER 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

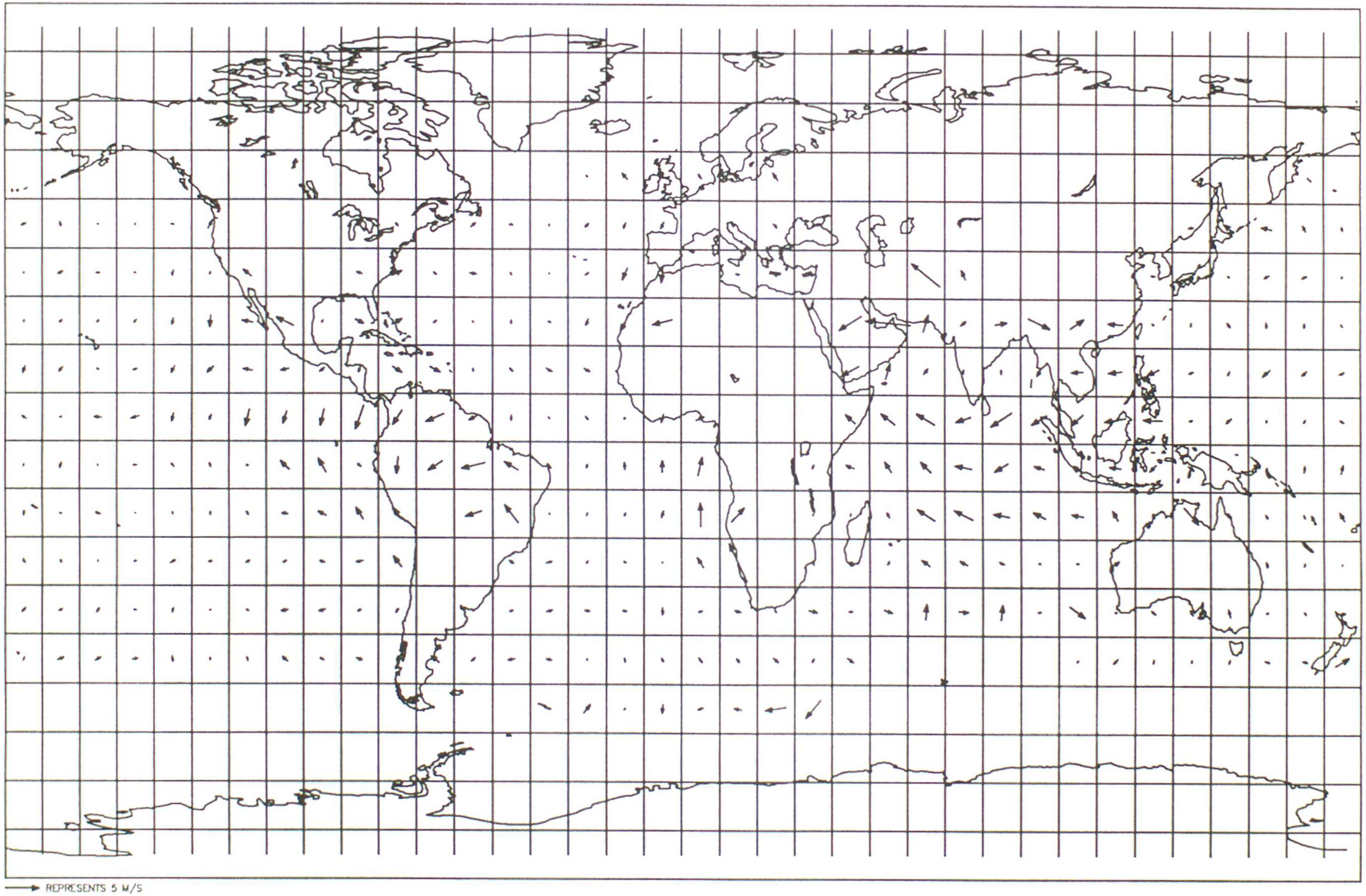
FIGURE 11


REPRESENTS 10 M/S

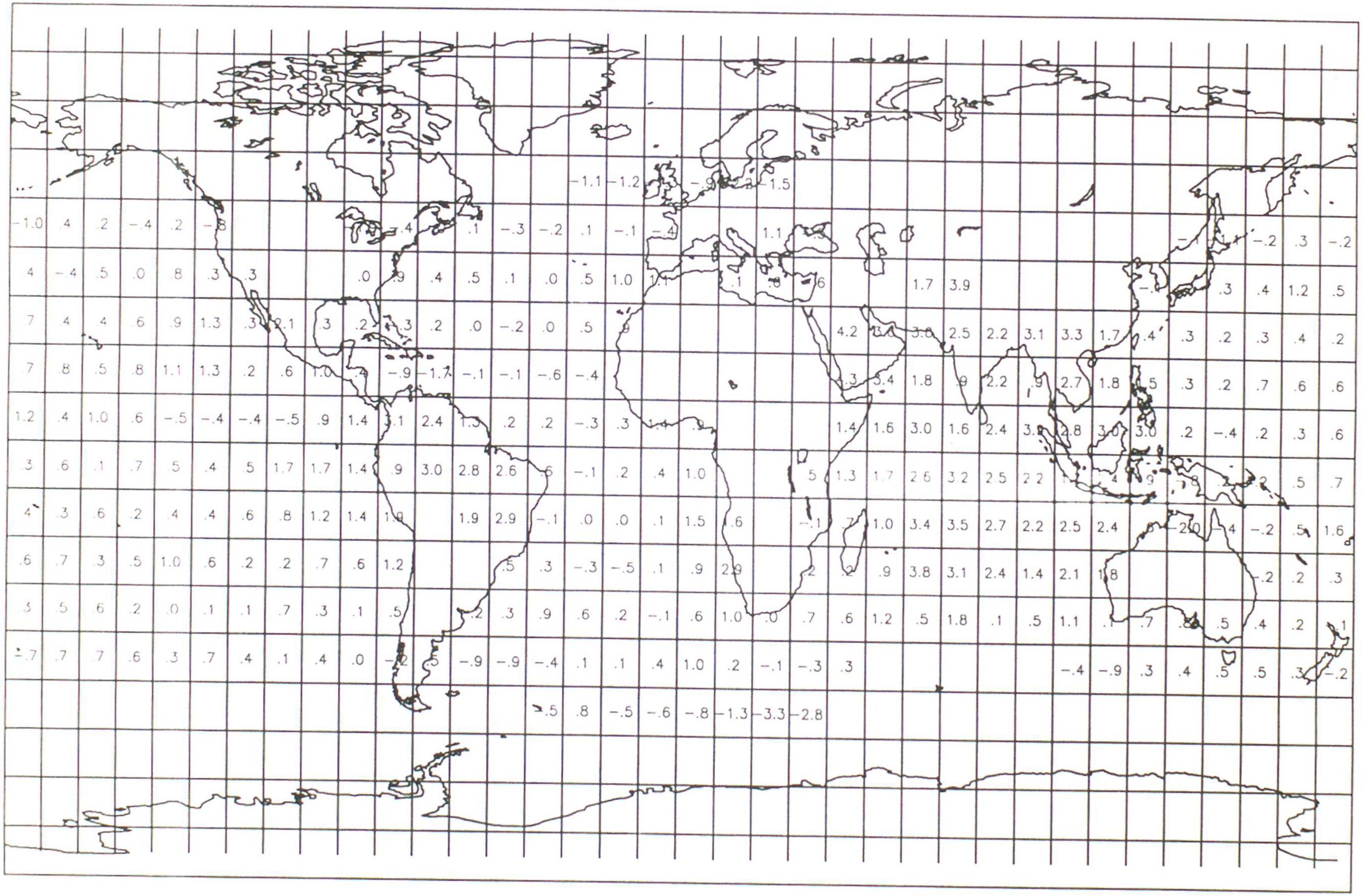
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA

FIGURE 12

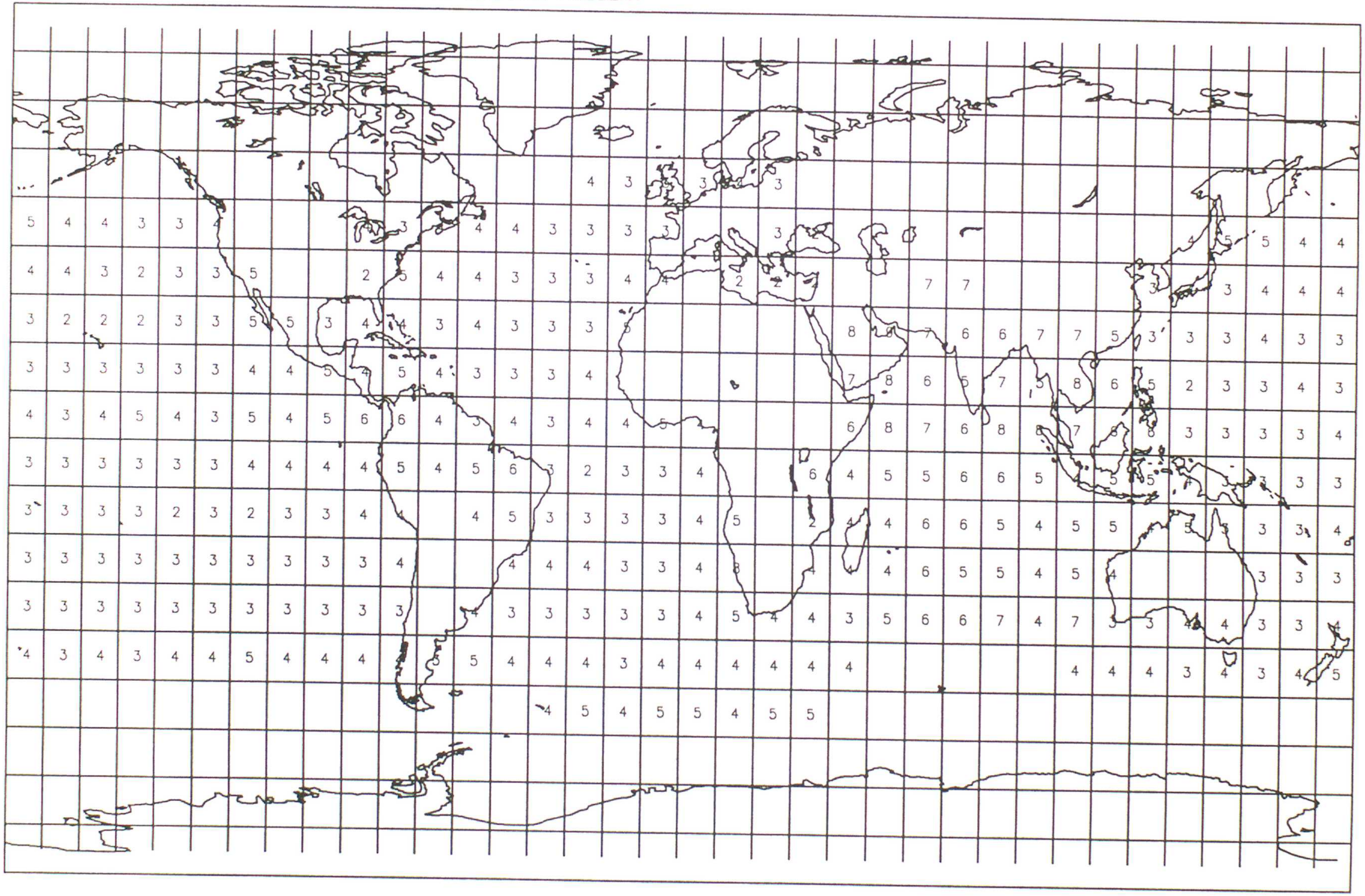
SEPTEMBER 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT



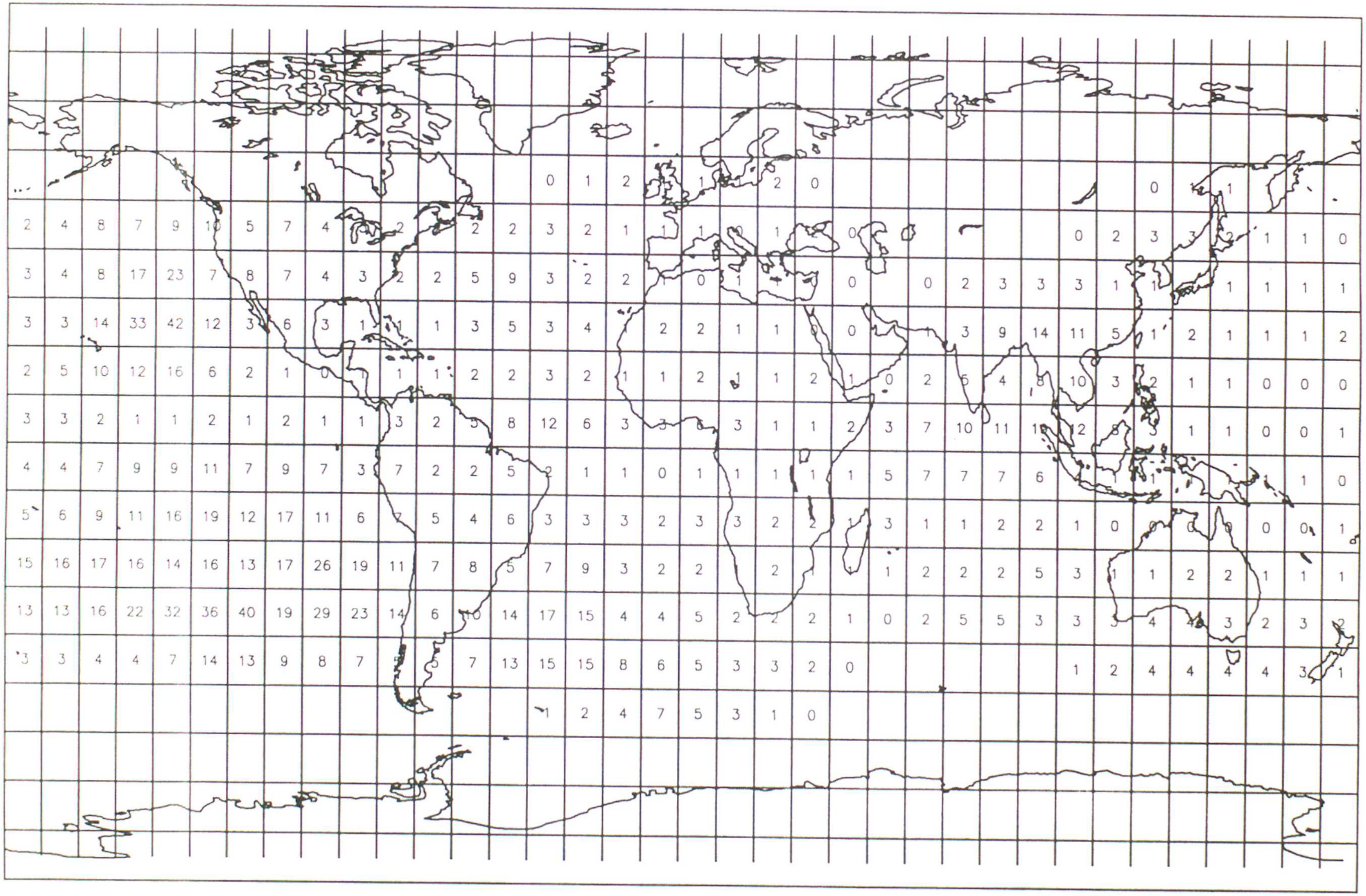
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
SEPTEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-1.1 -1.2 -.9 -1.5
-1.0 .4 .2 -.4 .2 -.8 .4 .1 -.3 -.2 .1 -.1 -.4 1.1 -.1 -.2 .3 -.2
.4 -.4 .5 .0 .8 .3 .3 .0 .9 .4 .5 .1 .0 .5 1.0 1.1 .1 .6 .6 1.7 3.9 -.6 .3 .4 1.2 .5
.7 .4 .4 .6 .9 1.3 .3 2.1 .3 .2 .3 .2 .0 -.2 .0 .5 .9 4.2 3.4 3.6 2.5 2.2 3.1 3.3 1.7 .4 .3 .2 .3 .4 .2
.7 .8 .5 .8 1.1 1.3 .2 .6 1.0 .4 -.9 -1.7 -.1 -.1 -.6 -.4 .3 3.4 1.8 .9 2.2 .9 2.7 1.8 .5 .3 .2 .7 .6 .6
1.2 .4 1.0 .6 -.5 -.4 -.4 -.5 .9 1.4 3.1 2.4 1.3 .2 .2 -.3 .3 1.4 .9 1.4 1.6 3.0 1.6 2.4 3.2 2.8 3.0 3.0 .2 -.4 .2 .3 .6
.3 .6 .1 .7 .5 .4 .5 1.7 1.7 1.4 .9 3.0 2.8 2.6 .6 -.1 .2 .4 1.0 .5 1.3 1.7 2.6 3.2 2.5 2.2 .4 .9 .8 .2 .2 .5 .7
.4 .3 .6 .2 .4 .4 .6 .8 1.2 1.4 1.0 1.9 2.9 -.1 .0 .0 .1 1.5 .6 -.1 .7 1.0 3.4 3.5 2.7 2.2 2.5 2.4 .6 2.0 .4 -.2 .5 1.6
.6 .7 .3 .5 1.0 .6 .2 .2 .7 .6 1.2 .5 .3 -.3 -.5 .1 .9 2.9 .2 .2 .9 3.8 3.1 2.4 1.4 2.1 1.8 -.2 .2 .3
.3 .5 .6 .2 .0 .1 .1 .7 .3 .1 .5 .2 .3 .9 .6 .2 -.1 .6 1.0 .0 .7 .6 1.2 .5 1.8 .1 .5 1.1 .1 .7 .8 .5 .4 .2 .1
.7 .7 .7 .6 .3 .7 .4 .1 .4 .0 -.2 .5 -.9 -.9 -.4 .1 .1 .4 1.0 .2 -.1 -.3 .3 -.4 -.9 .3 .4 .5 .5 .3 -.2
.5 .8 -.5 -.6 -.8 -1.3 -3.3 -2.8

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
SEPTEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

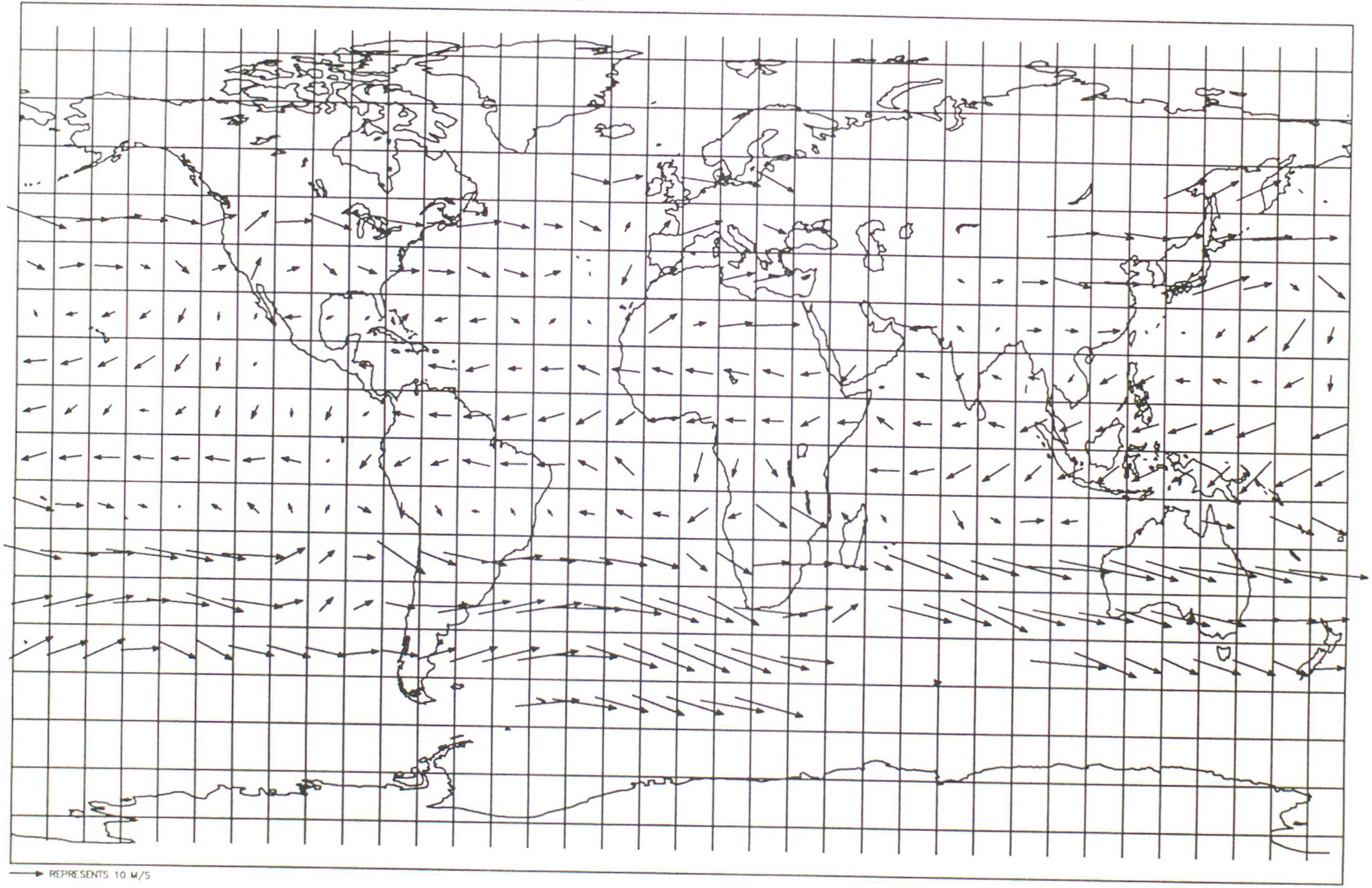

4 3 3 3 3
5 4 4 3 3 4 3 4 4 3 3 3 3 3 3 4 5 5 4 4
4 4 3 2 3 3 5 2 5 4 4 3 3 3 4 4 2 7 7 3 3 4 4 4
3 2 2 2 3 3 5 5 3 4 4 3 4 3 3 3 5 8 8 7 6 6 7 7 5 3 3 3 4 3 3
3 3 3 3 3 3 4 4 5 5 4 3 3 3 4 7 8 6 5 7 5 8 6 5 2 3 3 4 3
4 3 4 5 4 3 5 4 5 6 6 4 3 4 3 4 4 5 6 8 7 6 8 8 7 8 6 3 3 3 3 4
3 3 3 3 3 3 4 4 4 4 5 4 5 6 3 2 3 3 4 6 4 5 5 6 6 5 5 5 3 3 3
3 3 3 3 2 3 2 3 3 4 4 4 5 3 3 3 3 4 5 2 4 4 6 6 5 4 5 5 5 3 3 3 4
3 3 3 3 3 3 3 3 3 3 4 4 4 4 3 3 4 8 4 4 6 5 5 4 5 4 3 3 3
3 3 3 3 3 3 3 3 3 3 3 4 3 3 3 3 3 4 5 4 4 3 5 6 6 7 4 7 3 3 4 4 3 3 4
4 3 4 3 4 4 5 4 4 4 5 5 4 4 4 3 4 4 4 4 4 4 4 4 4 3 4 3 4 5
4 5 4 5 5 4 5 5

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
SEPTEMBER 1997


0 1 2 1 2 0 0 1 1
2 4 8 7 9 10 5 7 4 2 2 2 3 2 1 1 1 0 1 2 0 0 2 3 3 2 1 1 0
3 4 8 17 23 7 8 7 4 3 2 2 5 9 3 2 2 1 0 1 1 0 0 0 2 3 3 3 1 1 1 1 1 1
3 3 14 33 42 12 3 6 3 1 1 1 3 5 3 4 1 2 2 1 1 0 0 1 3 9 14 11 5 1 2 1 1 1 2
2 5 10 12 16 6 2 1 0 1 1 1 2 2 3 2 1 1 2 1 1 2 1 0 2 5 4 8 10 3 2 1 1 0 0 0
3 3 2 1 1 2 1 2 1 1 3 2 5 8 12 6 3 3 6 3 1 1 2 3 7 10 11 1 12 8 3 1 1 0 0 1
4 4 7 9 9 11 7 9 7 3 7 2 2 5 2 1 1 0 1 1 1 1 1 5 7 7 7 6 1 1 1 1 0
5 6 9 11 16 19 12 17 11 6 7 5 4 6 3 3 3 2 3 3 2 2 1 3 1 1 2 2 1 0 0 0 0 0 0 1
15 16 17 16 14 16 13 17 26 19 11 7 8 5 7 9 3 2 2 2 1 1 1 2 2 2 5 3 1 1 2 2 1 1 1
13 13 16 22 32 36 40 19 29 23 14 6 10 14 17 15 4 4 5 2 2 2 1 0 2 5 5 3 3 3 4 4 3 2 3 2
3 3 4 4 7 14 13 9 8 7 5 5 7 13 15 15 8 6 5 3 3 2 0 1 2 4 4 4 4 3 1
1 2 4 7 5 3 1 0

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
SEPTEMBER 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16


→ REPRESENTS 10 M/S

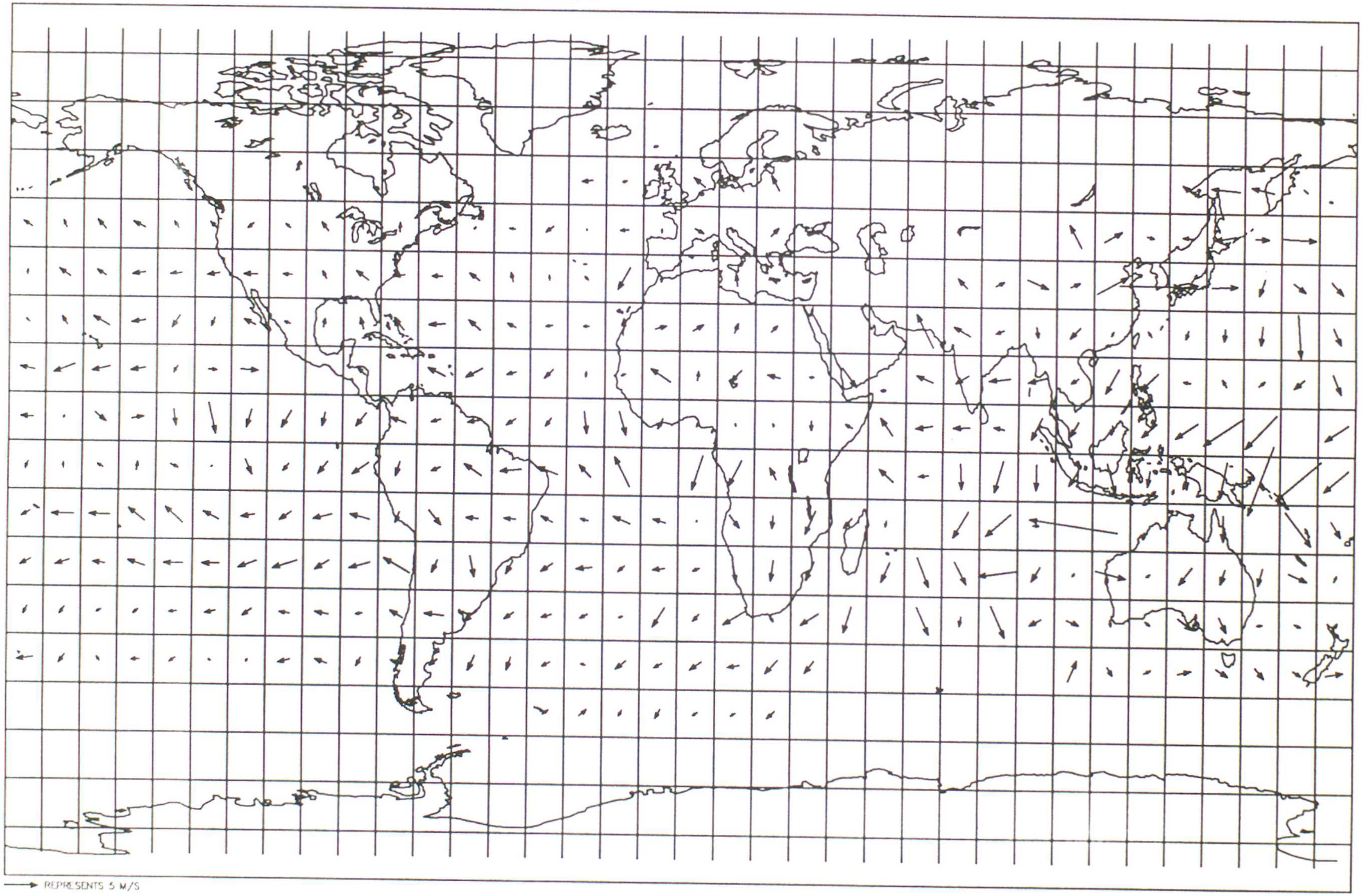
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 401-700 HPA

FIGURE 17

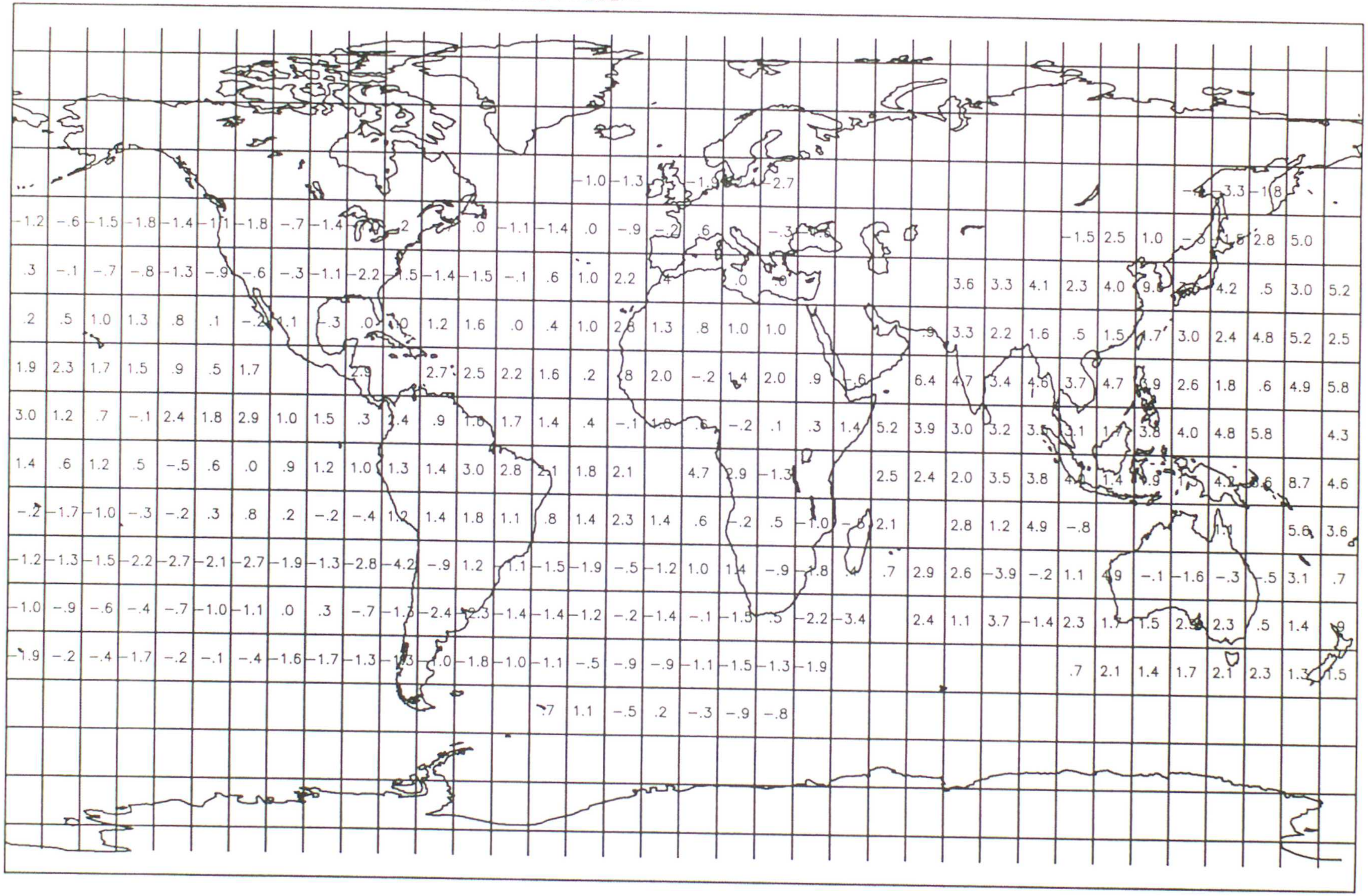
SEPTEMBER 1997

ALL OBSERVATIONS

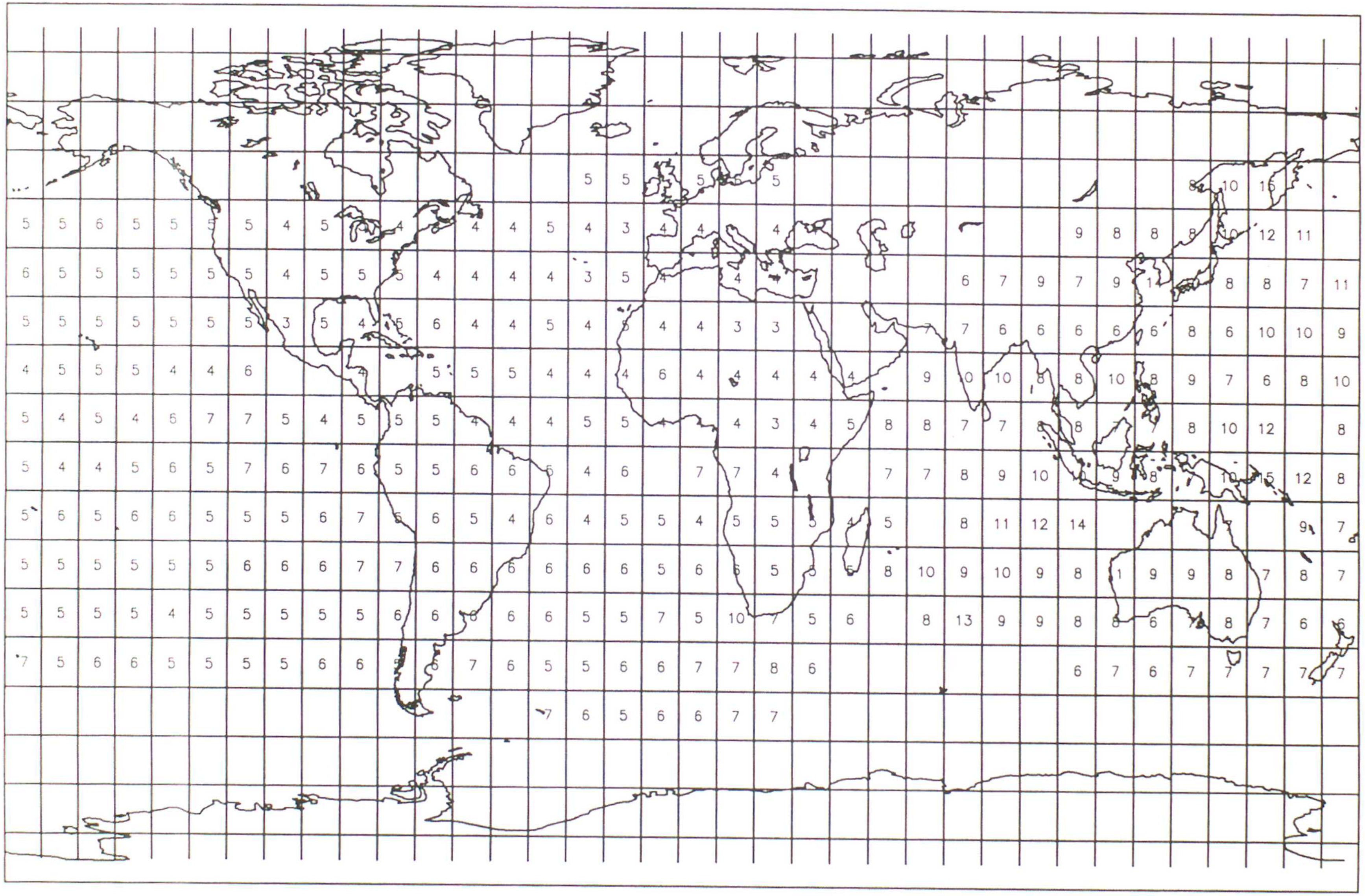
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT



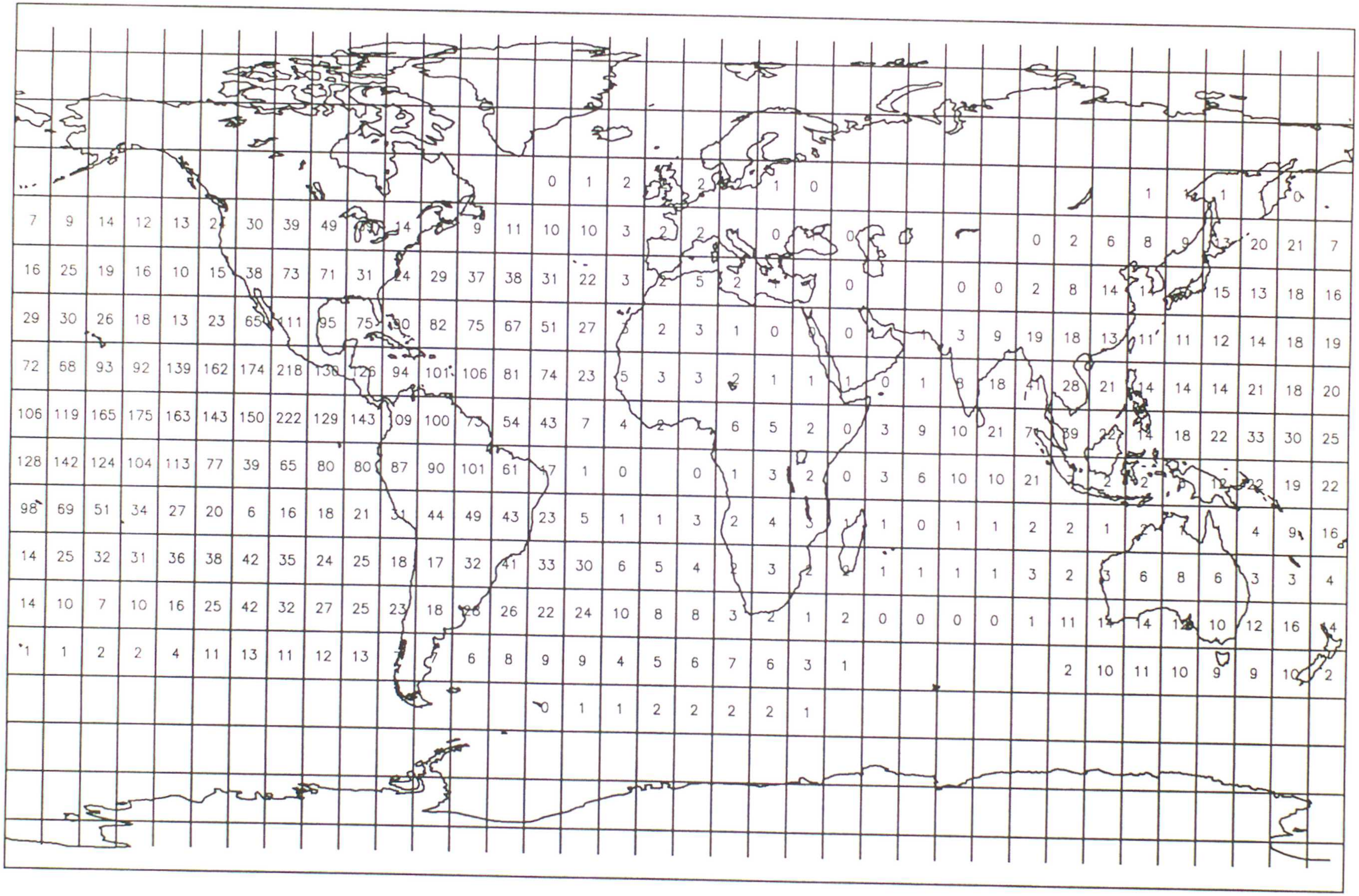
SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
SEPTEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-1.0 -1.3 -1.9 -2.7 -4 -3.3 -1.8
-1.2 -.6 -1.5 -1.8 -1.4 -1.1 -1.8 -.7 -1.4 -.2 .0 -1.1 -1.4 .0 -.9 -.2 .6 -.3 -1.5 2.5 1.0 -.3 -1.5 2.8 5.0
.3 -.1 -.7 -.8 -1.3 -.9 -.6 -.3 -1.1 -2.2 -1.5 -1.4 -1.5 -.1 .6 1.0 2.2 .4 .0 .0 3.6 3.3 4.1 2.3 4.0 9.6 4.2 .5 3.0 5.2
.2 .5 1.0 1.3 .8 .1 -.2 1.1 -.3 .0 .0 1.2 1.6 .0 .4 1.0 2.8 1.3 .8 1.0 1.0 .9 3.3 2.2 1.6 .5 1.5 1.7 3.0 2.4 4.8 5.2 2.5
1.9 2.3 1.7 1.5 .9 .5 1.7 2.9 2.7 2.5 2.2 1.6 .2 .8 2.0 -.2 1.4 2.0 .9 .6 6.4 4.7 3.4 4.6 3.7 4.7 3.9 2.6 1.8 .6 4.9 5.8
3.0 1.2 .7 -.1 2.4 1.8 2.9 1.0 1.5 .3 2.4 .9 1.6 1.7 1.4 .4 -.1 1.6 .6 -.2 .1 .3 1.4 5.2 3.9 3.0 3.2 3.5 3.1 1.7 3.8 4.0 4.8 5.8 4.3
1.4 .6 1.2 .5 -.5 .6 .0 .9 1.2 1.0 1.3 1.4 3.0 2.8 2.1 1.8 2.1 4.7 2.9 -1.3 2.5 2.4 2.0 3.5 3.8 4.0 1.4 1.9 4.2 3.6 8.7 4.6
-.2 -1.7 -1.0 -.3 -.2 .3 .8 .2 -.2 -.4 1.2 1.4 1.8 1.1 .8 1.4 2.3 1.4 .6 -.2 .5 -1.0 -.6 2.1 2.8 1.2 4.9 -.8 1.1 5.6 3.6
-1.2 -1.3 -1.5 -2.2 -2.7 -2.1 -2.7 -1.9 -1.3 -2.8 -4.2 -.9 1.2 1.1 -1.5 -1.9 -.5 -1.2 1.0 1.4 -.9 -1.8 .4 .7 2.9 2.6 -3.9 -.2 1.1 4.9 -.1 -1.6 -.3 -.5 3.1 .7
-1.0 -.9 -.6 -.4 -.7 -1.0 -1.1 .0 .3 -.7 -1.3 -2.4 -2.3 -1.4 -1.4 -1.2 -.2 -1.4 -.1 -1.5 .5 -2.2 -3.4 2.4 1.1 3.7 -1.4 2.3 1.7 1.5 2.5 2.3 .5 1.4 .9
-1.9 -.2 -.4 -1.7 -.2 -.1 -.4 -1.6 -1.7 -1.3 -1.3 -1.0 -1.8 -1.0 -1.1 -.5 -.9 -.9 -1.1 -1.5 -1.3 -1.9 .7 2.1 1.4 1.7 2.1 2.3 1.3 1.5
.7 1.1 -.5 .2 -.3 -.9 -.8

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
SEPTEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

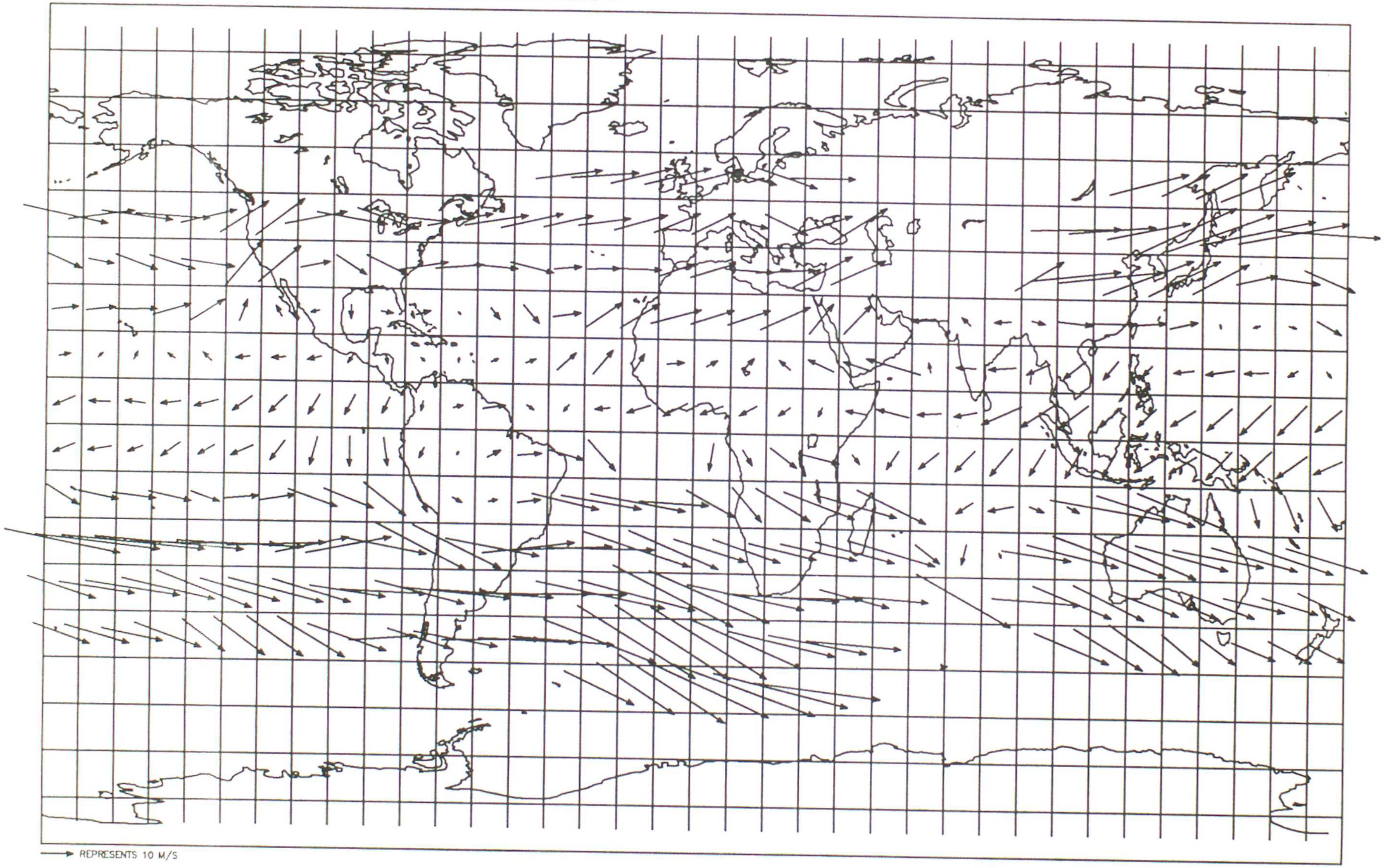

5 5 5 5 5 5 8 10 15
5 5 6 5 5 5 5 4 5 4 4 4 4 5 4 3 4 4 4 9 8 8 8 10 12 11
6 5 5 5 5 5 5 4 5 5 5 4 4 4 4 3 5 4 4 6 7 9 7 9 1 8 8 7 11
5 5 5 5 5 5 5 3 5 4 5 6 4 4 5 4 5 4 4 3 3 7 7 6 6 6 6 6 8 6 10 10 9
4 5 5 5 4 4 6 4 5 5 5 4 4 4 6 4 4 4 4 4 9 10 10 8 8 10 8 9 7 6 8 10
5 4 5 4 6 7 7 5 4 5 5 5 4 4 4 5 5 4 4 3 4 5 8 8 7 7 8 8 7 7 8 10 12 8
5 4 4 5 6 5 7 6 7 6 5 5 6 6 5 4 6 7 7 4 7 7 8 9 10 10 9 8 10 15 12 8
5 6 5 6 6 5 5 5 6 7 6 6 5 4 6 4 5 5 4 5 5 5 4 5 8 11 12 14 9 7
5 5 5 5 5 5 6 6 6 7 7 6 6 6 6 6 6 5 6 6 5 5 6 8 10 9 10 9 8 1 9 9 8 7 8 7
5 5 5 5 4 5 5 5 5 5 6 6 6 6 6 5 5 7 5 10 7 5 6 8 13 9 9 8 8 6 7 8 7 6 6
7 5 6 6 5 5 5 5 6 6 5 6 7 6 5 5 6 6 7 7 8 6 6 7 6 7 7 7 7 7
7 6 5 6 6 7 7

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
SEPTEMBER 1997


0 1 2 2 1 0 1 1 1 0
7 9 14 12 13 2 30 39 49 14 9 11 10 10 3 2 2 0 0 0 2 6 8 9 13 20 21 7
16 25 19 16 10 15 38 73 71 31 24 29 37 38 31 22 3 2 5 2 0 0 0 2 8 14 14 15 13 18 16
29 30 26 18 13 23 65 111 95 75 130 82 75 67 51 27 3 2 3 1 0 0 0 1 3 9 19 18 13 11 11 12 14 18 19
72 68 93 92 139 162 174 218 130 126 94 101 106 81 74 23 5 3 3 2 1 1 1 0 1 8 18 41 28 21 14 14 14 21 18 20
106 119 165 175 163 143 150 222 129 143 109 100 73 54 43 7 4 2 6 5 2 0 3 9 10 21 7 39 22 14 18 22 33 30 25
128 142 124 104 113 77 39 65 80 80 87 90 101 61 17 1 0 0 1 3 2 0 3 6 10 10 21 7 2 2 0 12 22 19 22
98 69 51 34 27 20 6 16 18 21 31 44 49 43 23 5 1 1 3 2 4 3 1 1 0 1 1 2 2 1 2 7 4 9 16
14 25 32 31 36 38 42 35 24 25 18 17 32 41 33 30 6 5 4 2 3 2 2 1 1 1 1 3 2 3 6 8 6 3 3 4
14 10 7 10 16 25 42 32 27 25 23 18 28 26 22 24 10 8 8 3 2 1 2 0 0 0 0 1 11 14 14 12 10 12 16 14
1 1 2 2 4 11 13 11 12 13 7 7 6 8 9 9 4 5 6 7 6 3 1 2 10 11 10 9 9 10 2
0 1 1 2 2 2 2 1

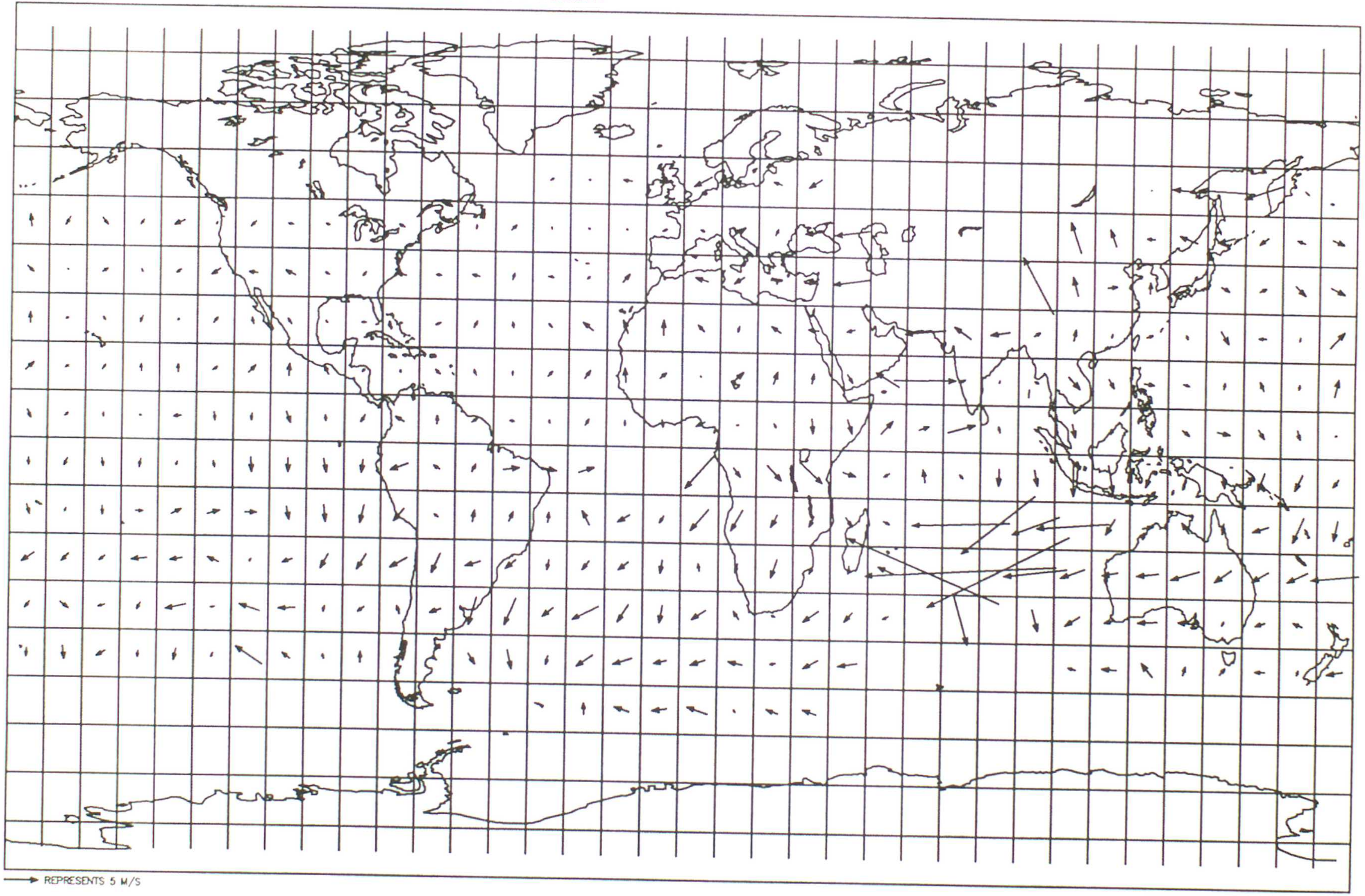
SATOB VECTOR MEAN WINDS BETWEEN 101-400 HPA
SEPTEMBER 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21

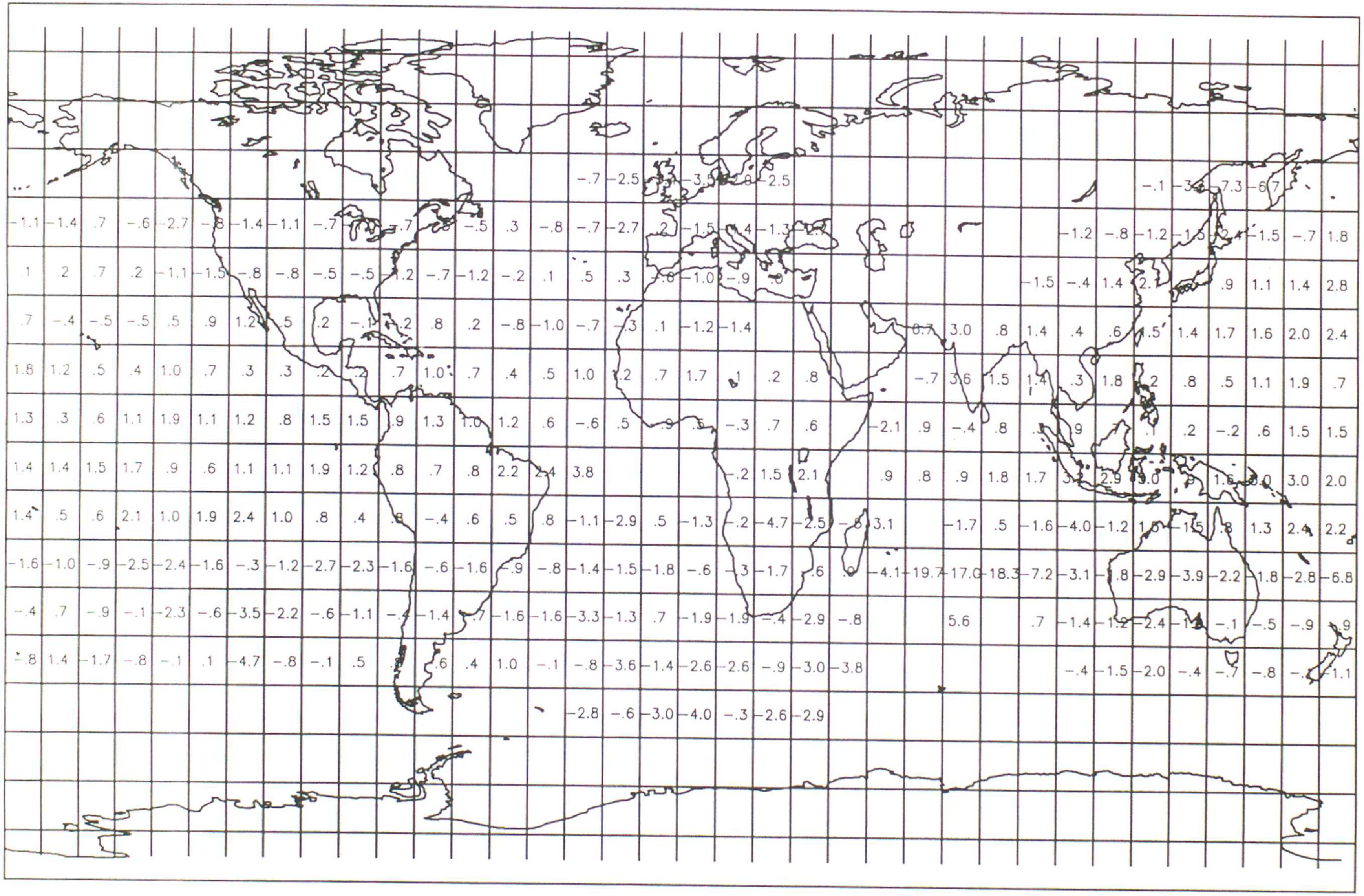

REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA
SEPTEMBER 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

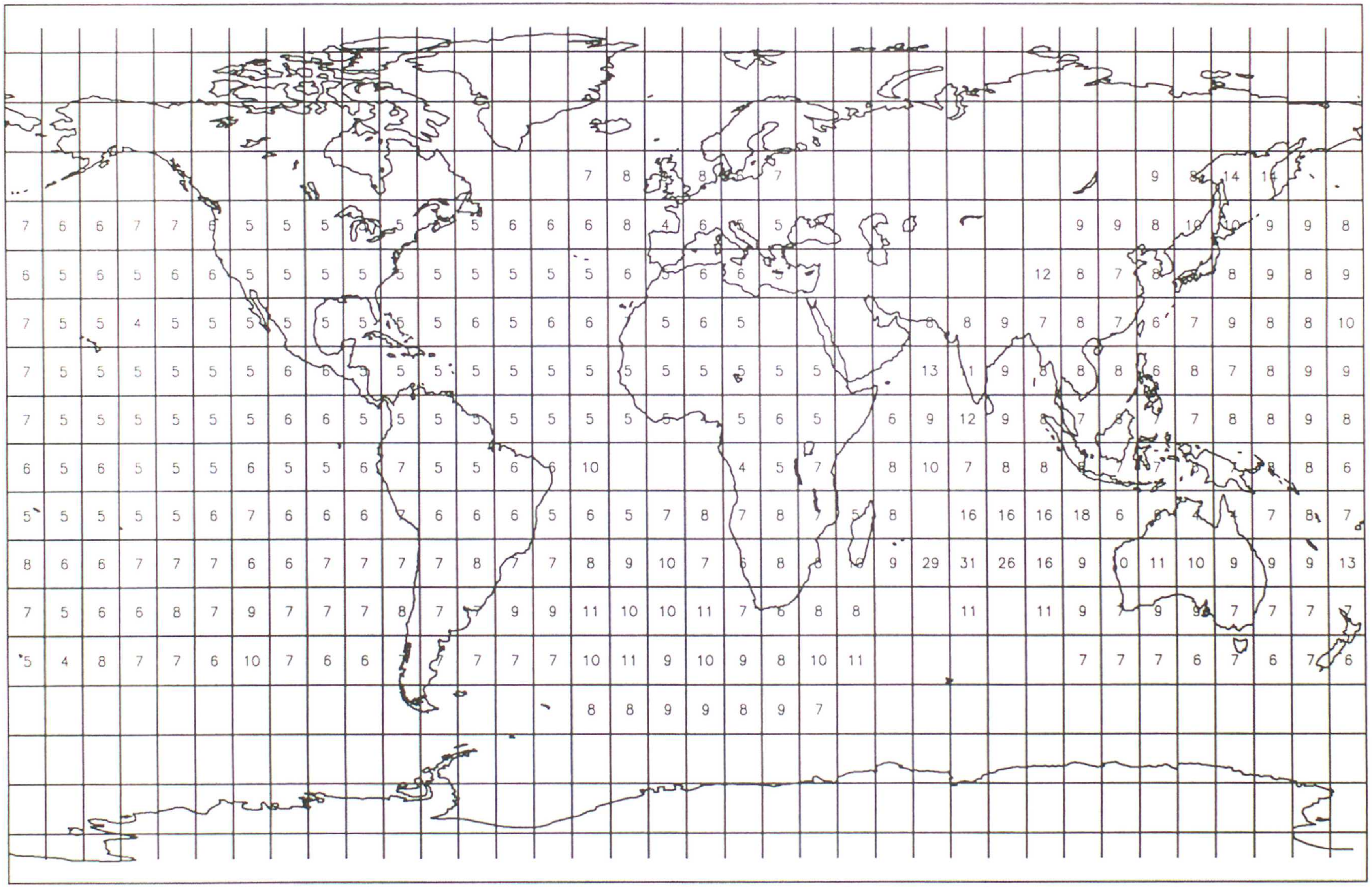
FIGURE 22



SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
SEPTEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-.7 -2.5 -3.5 -.8 -2.5 -.1 -3.4 -7.3 -6.7
-1.1 -1.4 .7 -.6 -2.7 -.8 -1.4 -1.1 -.7 .7 -.8 -.5 .3 -.8 -.7 -2.7 .2 -1.5 -.4 -1.3 -1.2 -.8 -1.2 -1.5 -2.4 -1.5 -.7 1.8
.1 .2 .7 .2 -1.1 -1.5 -.8 -.8 -.5 -.5 -1.2 -.7 -1.2 -.2 .1 .5 .3 .6 -1.0 -.9 .0 -1.5 -.4 1.4 2.1 .9 1.1 1.4 2.8
.7 -.4 -.5 -.5 .5 .9 1.2 .5 .2 -.1 -.2 .8 .2 -.8 -1.0 -.7 -.3 .1 -1.2 -1.4 0.7 3.0 .8 1.4 .4 .6 1.5 1.4 1.7 1.6 2.0 2.4
1.8 1.2 .5 .4 1.0 .7 .3 .3 .2 .2 .7 1.0 .7 .4 .5 1.0 .2 .7 1.7 .1 .2 .8 -.7 3.6 1.5 1.4 .3 1.8 .2 .8 .5 1.1 1.9 .7
1.3 .3 .6 1.1 1.9 1.1 1.2 .8 1.5 1.5 .9 1.3 1.0 1.2 .6 -.6 .5 .9 .5 -.3 .7 .6 -2.1 .9 -.4 .8 .9 .7 .1 .2 -.2 .6 1.5 1.5
1.4 1.4 1.5 1.7 .9 .6 1.1 1.1 1.9 1.2 .8 .7 .8 2.2 2.4 3.8 -.2 1.5 2.1 .9 .8 .9 1.8 1.7 3.2 2.9 3.0 .9 1.6 3.0 3.0 2.0
1.4 .5 .6 2.1 1.0 1.9 2.4 1.0 .8 .4 .8 -.4 .6 .5 .8 -1.1 -2.9 .5 -1.3 -.2 -4.7 -2.5 -.6 3.1 -1.7 .5 -1.6 -4.0 -1.2 1.6 -1.5 .8 1.3 2.4 2.2
-1.6 -1.0 -.9 -2.5 -2.4 -1.6 -.3 -1.2 -2.7 -2.3 -1.6 -.6 -1.6 -.9 -.8 -1.4 -1.5 -1.8 -.6 -.3 -1.7 .6 .0 -4.1 -19.7 -17.0 -18.3 -7.2 -3.1 -.8 -2.9 -3.9 -2.2 -1.8 -2.8 -6.8
-.4 .7 -.9 -.1 -2.3 -.6 -3.5 -2.2 -.6 -1.1 -.4 -1.4 .7 -1.6 -1.6 -3.3 -1.3 .7 -1.9 -1.9 -.4 -2.9 -.8 5.6 .7 -1.4 -1.2 -2.4 -1.3 -.1 -.5 -.9 .9
-.8 1.4 -1.7 -.8 -.1 .1 -4.7 -.8 -.1 .5 .8 .6 .4 1.0 -.1 -.8 -3.6 -1.4 -2.6 -2.6 -.9 -3.0 -3.8 -.4 -1.5 -2.0 -.4 -.7 -.8 -.6 -1.1
-2.8 -.6 -3.0 -4.0 -.3 -2.6 -2.9

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
SEPTEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


7 8 8 8 6 7 9 8 14 14
7 6 6 7 7 6 5 5 5 5 5 5 6 6 6 8 4 6 5 5 7 9 9 8 10 10 9 9 8
6 5 6 5 6 6 5 5 5 5 5 5 5 5 5 5 6 5 6 6 5 12 8 7 8 8 9 8 9
7 5 5 4 5 5 5 5 5 5 5 5 6 5 6 6 7 5 6 5 8 8 9 7 8 7 6 7 9 8 8 10
7 5 5 5 5 5 5 6 6 5 5 5 5 5 5 5 5 5 5 5 5 5 13 1 9 8 8 8 6 8 7 8 9 9
7 5 5 5 5 5 5 6 6 5 5 5 5 5 5 5 5 5 5 6 5 6 9 12 9 8 7 8 7 7 8 8 9 8
6 5 6 5 5 5 6 5 5 6 7 5 5 6 6 10 4 5 7 8 10 7 8 8 8 7 7 8 7 8 8 6
5 5 5 5 5 6 7 6 6 6 7 6 6 6 5 6 5 7 8 7 8 7 5 8 16 16 16 18 6 8 4 4 7 8 7
8 6 6 7 7 7 6 6 7 7 7 7 8 7 7 8 9 10 7 6 8 8 10 9 29 31 26 16 9 10 11 10 9 9 9 13
7 5 6 6 8 7 9 7 7 7 8 7 7 9 9 11 10 10 11 7 6 8 8 11 11 9 7 9 9 7 7 7 7
5 4 8 7 7 6 10 7 6 6 7 7 7 7 7 10 11 9 10 9 8 10 11 7 7 7 6 7 6 7 6
8 8 9 9 8 9 7

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

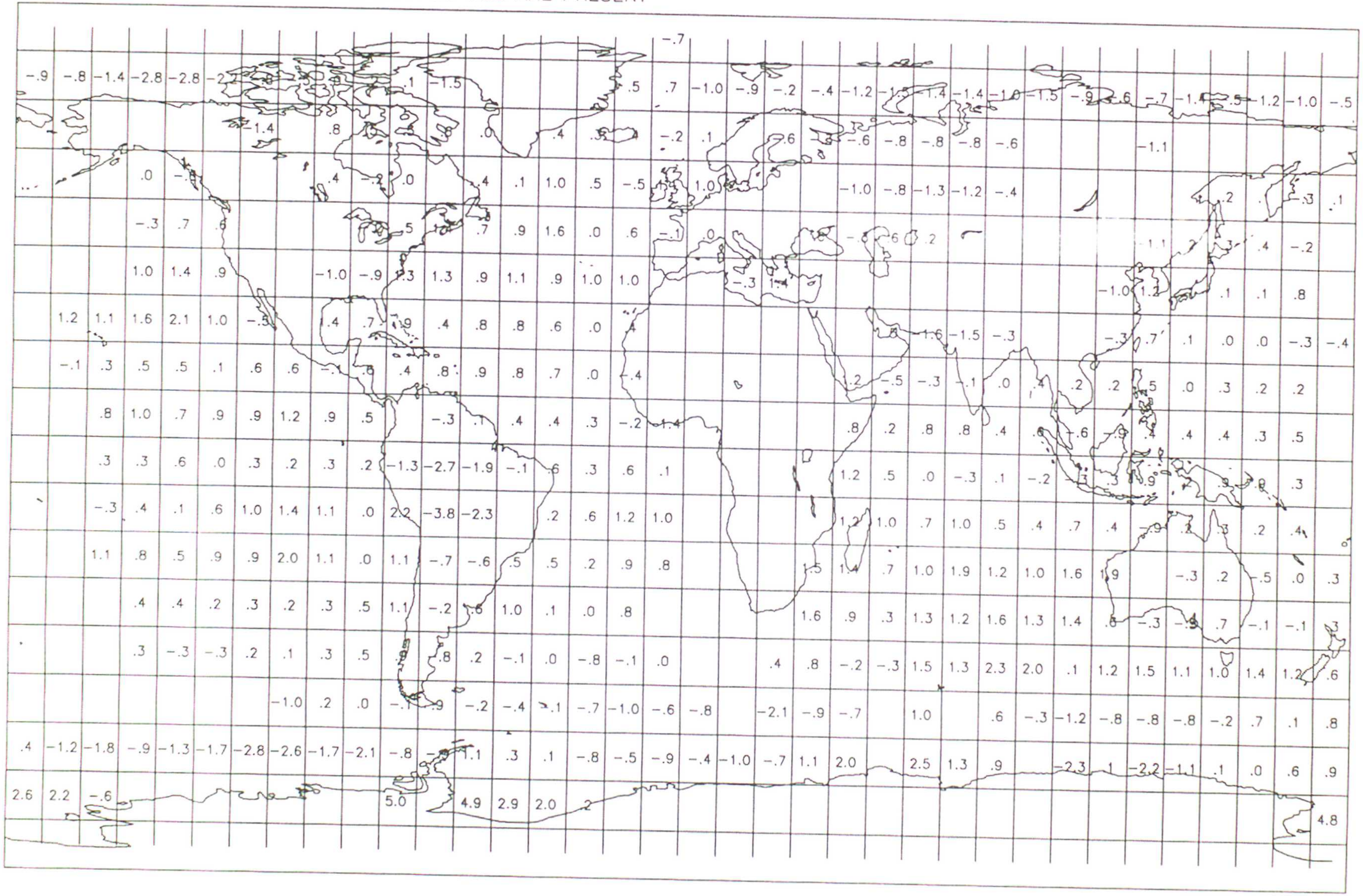
MONTH: September, 1997

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-12, NOAA-14 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer: 850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa
	:Mean observation minus background temperature differences

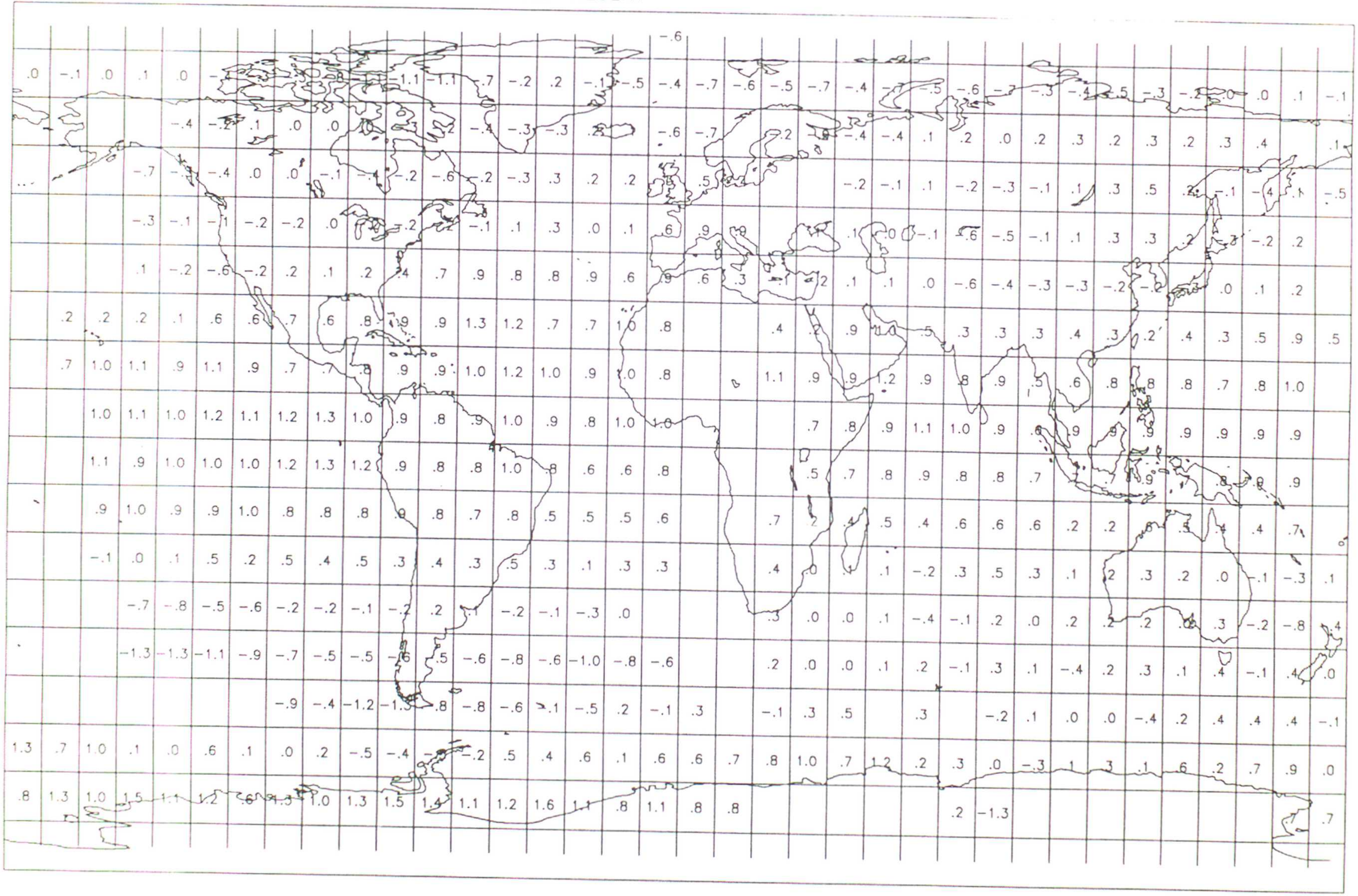
500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
SEPTEMBER 1997
NOAA–11, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 25


-.7
-.9 -.8 -1.4 -2.8 -2.8 .1 -1.5 .5 .7 -1.0 -.9 -.2 -.4 -1.2 -1.4 -1.4 -1.0 -1.5 -.9 -.6 -.7 -1.4 -.5 -1.2 -1.0 -.5
-1.4 .8 .0 .4 .3 -.2 .1 .6 -.6 -.8 -.8 -.8 -.6 -1.1
.0 .4 -.2 .0 .4 .1 1.0 .5 -.5 1.0 -1.0 -.8 -1.3 -1.2 -.4 .2 .3 .1
-.3 .7 .6 .5 .7 .9 1.6 .0 .6 -.1 .0 -.6 -.6 .2 -1.1 .4 -.2
1.0 1.4 .9 -1.0 -.9 .3 1.3 .9 1.1 .9 1.0 1.0 -.3 1.4 -1.0 1.2 .1 .1 .8
1.2 1.1 1.6 2.1 1.0 -.5 .4 .7 .9 .4 .8 .8 .6 .0 .4 .6 -1.6 -1.5 -.3 -.3 .7 .1 .0 .0 -.3 -.4
-.1 .3 .5 .5 .1 .6 .6 -.1 .6 .4 .8 .9 .8 .7 .0 .4 .2 -.5 -.3 .1 .0 .4 .2 .2 .5 .0 .3 .2 .2
.8 1.0 .7 .9 .9 1.2 .9 .5 -.3 .1 .4 .4 .3 -.2 1.4 .8 .2 .8 .8 .4 .6 .6 .9 .4 .4 .4 .3 .5
.3 .3 .6 .0 .3 .2 .3 .2 -1.3 -2.7 -1.9 -.1 .6 .3 .6 .1 1.2 .5 .0 -.3 .1 -.2 .3 .3 .9 .3 .8 .3
-.3 .4 .1 .6 1.0 1.4 1.1 .0 2.2 -3.8 -2.3 .2 .6 1.2 1.0 1.2 1.0 .7 1.0 .5 .4 .7 .4 .9 .2 .3 .2 .4
1.1 .8 .5 .9 .9 2.0 1.1 .0 1.1 -.7 -.6 .5 .5 .2 .9 .8 1.5 1.4 .7 1.0 1.9 1.2 1.0 1.6 1.9 -.3 .2 -.5 .0 .3
.4 .4 .2 .3 .2 .3 .5 1.1 -.2 .6 1.0 .1 .0 .8 1.6 .9 .3 1.3 1.2 1.6 1.3 1.4 .6 -.3 -.9 .7 -.1 -.1 .3
.3 -.3 -.3 .2 .1 .3 .5 .8 .8 .2 -.1 .0 -.8 -.1 .0 .4 .8 -.2 -.3 1.5 1.3 2.3 2.0 .1 1.2 1.5 1.1 1.0 1.4 1.2 .6
-1.0 .2 .0 -.1 .9 -.2 -.4 .1 -.7 -1.0 -.6 -.8 -2.1 -.9 -.7 1.0 .6 -.3 -1.2 -.8 -.8 -.8 -.2 .7 .1 .8
.4 -1.2 -1.8 -.9 -1.3 -1.7 -2.8 -2.6 -1.7 -2.1 -.8 1.1 .3 .1 -.8 -.5 -.9 -.4 -1.0 -.7 1.1 2.0 2.5 1.3 .9 -2.3 .1 -2.2 -1.1 .1 .0 .6 .9
2.6 2.2 -.6 5.0 4.9 2.9 2.0 .2
4.8

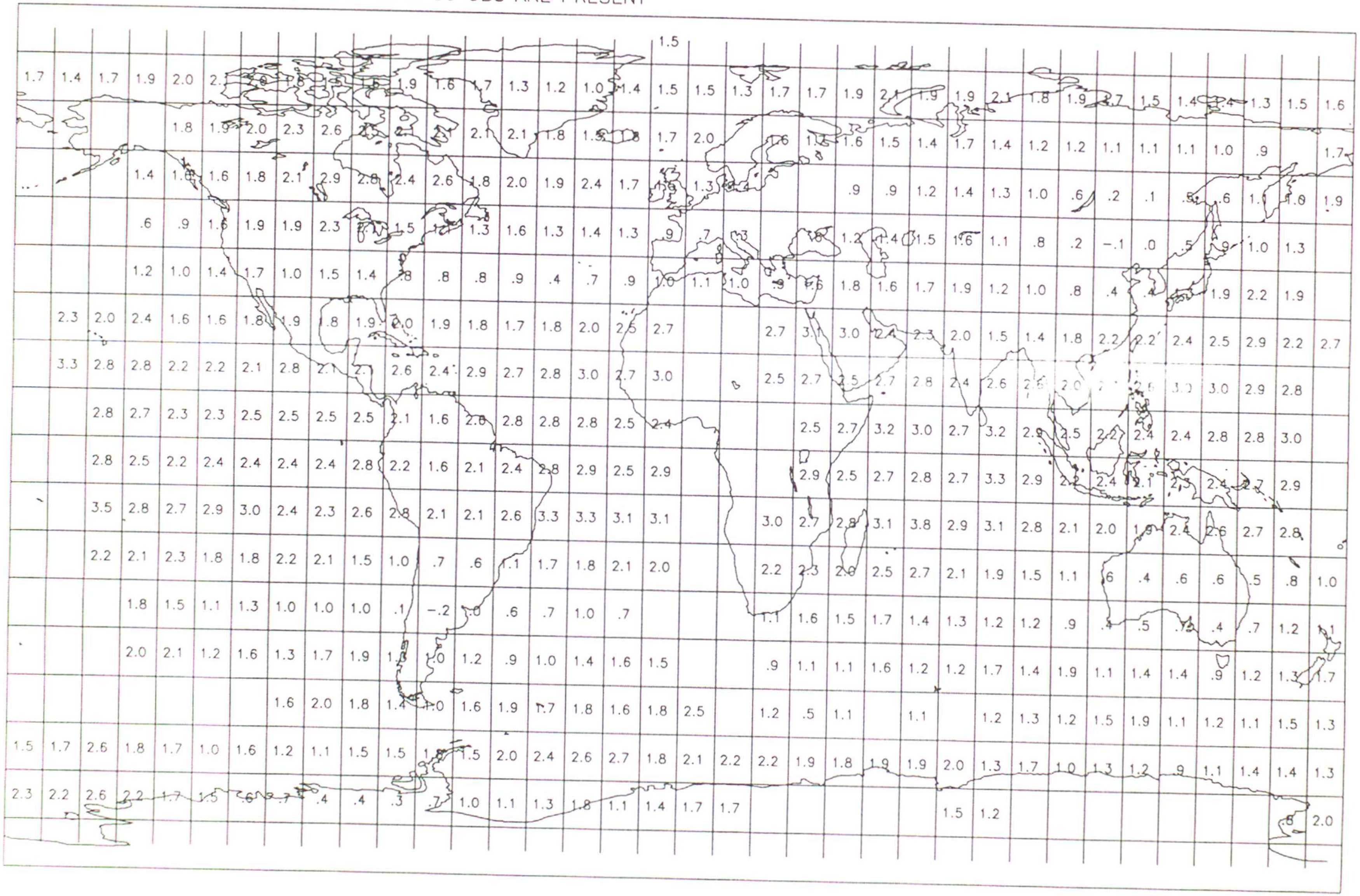
500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
SEPTEMBER 1997
NOAA-11, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 26



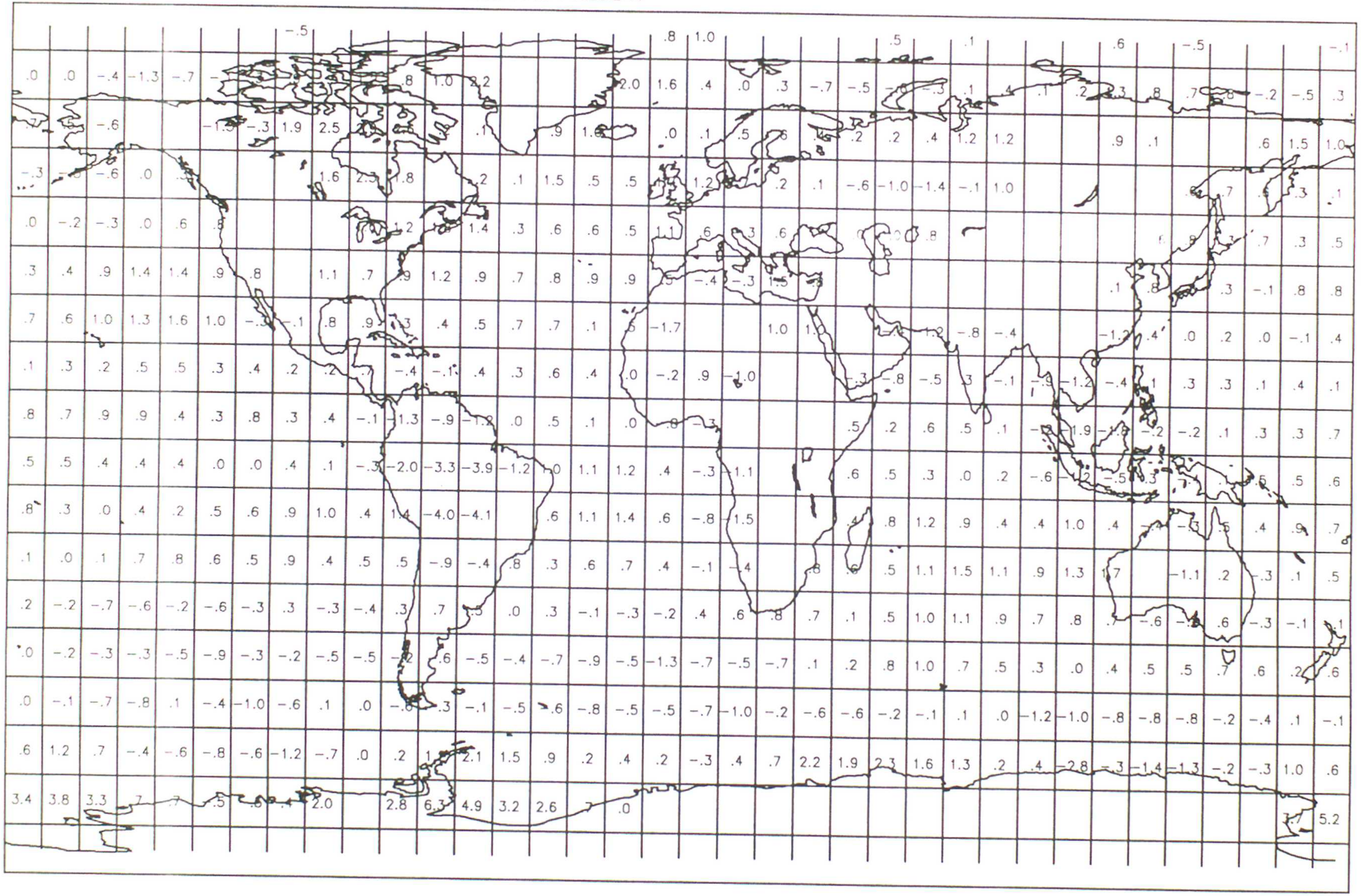
500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
SEPTEMBER 1997
NOAA-11, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 27


1.5
1.7 1.4 1.7 1.9 2.0 1.9 1.6 1.7 1.3 1.2 1.0 1.4 1.5 1.5 1.3 1.7 1.7 1.9 2.1 1.9 1.9 2.1 1.8 1.9 2.7 1.5 1.4 2.4 1.3 1.5 1.6
1.8 1.9 2.0 2.3 2.6 2.1 2.1 1.8 1.5 1.8 1.7 2.0 1.6 1.5 1.6 1.5 1.4 1.7 1.4 1.2 1.2 1.1 1.1 1.1 1.0 .9 1.7
1.4 1.6 1.6 1.8 2.1 2.9 2.8 2.4 2.6 1.8 2.0 1.9 2.4 1.7 1.3 .9 .9 1.2 1.4 1.3 1.0 .6 .2 .1 .5 .6 1.0 1.0 1.9
.6 .9 1.6 1.9 1.9 2.3 1.5 1.3 1.6 1.3 1.4 1.3 .9 .7 1.2 1.4 1.5 1.6 1.1 .8 .2 -.1 .0 .5 .9 1.0 1.3
1.2 1.0 1.4 1.7 1.0 1.5 1.4 .8 .8 .8 .9 .4 .7 .9 1.0 1.1 1.0 .9 1.6 1.8 1.6 1.7 1.9 1.2 1.0 .8 .4 .4 1.9 2.2 1.9
2.3 2.0 2.4 1.6 1.6 1.8 1.9 1.8 1.9 2.0 1.9 1.8 1.7 1.8 2.0 2.5 2.7 2.7 3.1 3.0 2.4 2.3 2.0 1.5 1.4 1.8 2.2 2.2 2.4 2.5 2.9 2.2 2.7
3.3 2.8 2.8 2.2 2.2 2.1 2.8 2.1 2.1 2.6 2.4 2.9 2.7 2.8 3.0 2.7 3.0 2.5 2.7 2.5 2.7 2.8 2.4 2.6 2.6 2.0 2.6 3.0 3.0 2.9 2.8
2.8 2.7 2.3 2.3 2.5 2.5 2.5 2.5 2.1 1.6 2.0 2.8 2.8 2.8 2.5 2.4 2.5 2.7 3.2 3.0 2.7 3.2 2.9 2.5 2.2 2.4 2.4 2.8 2.8 3.0
2.8 2.5 2.2 2.4 2.4 2.4 2.4 2.8 2.2 1.6 2.1 2.4 2.8 2.9 2.5 2.9 2.9 2.5 2.7 2.8 2.7 3.3 2.9 2.2 2.4 2.1 2.3 2.4 2.7 2.9
3.5 2.8 2.7 2.9 3.0 2.4 2.3 2.6 2.8 2.1 2.1 2.6 3.3 3.3 3.1 3.1 3.0 2.7 2.8 3.1 3.8 2.9 3.1 2.8 2.1 2.0 1.9 2.4 2.6 2.7 2.8
2.2 2.1 2.3 1.8 1.8 2.2 2.1 1.5 1.0 .7 .6 1.1 1.7 1.8 2.1 2.0 2.2 2.3 2.0 2.5 2.7 2.1 1.9 1.5 1.1 .6 .4 .6 .6 .5 .8 1.0
1.8 1.5 1.1 1.3 1.0 1.0 1.0 .1 -.2 1.0 .6 .7 1.0 .7 1.1 1.6 1.5 1.7 1.4 1.3 1.2 1.2 .9 .4 .5 .3 .4 .7 1.2 1.1
2.0 2.1 1.2 1.6 1.3 1.7 1.9 1.3 1.0 1.2 .9 1.0 1.4 1.6 1.5 .9 1.1 1.1 1.6 1.2 1.2 1.7 1.4 1.9 1.1 1.4 1.4 .9 1.2 1.3 1.7
1.6 2.0 1.8 1.4 1.0 1.6 1.9 1.7 1.8 1.6 1.8 2.5 1.2 .5 1.1 1.1 1.2 1.3 1.2 1.5 1.9 1.1 1.2 1.1 1.5 1.3
1.5 1.7 2.6 1.8 1.7 1.0 1.6 1.2 1.1 1.5 1.5 1.8 1.5 2.0 2.4 2.6 2.7 1.8 2.1 2.2 2.2 1.9 1.8 1.9 1.9 2.0 1.3 1.7 1.0 1.3 1.2 .9 1.1 1.4 1.4 1.3
2.3 2.2 2.6 2.2 1.7 1.5 .6 .7 .4 .4 .3 .7 1.0 1.1 1.3 1.8 1.1 1.4 1.7 1.7 1.5 1.2 .8 2.0

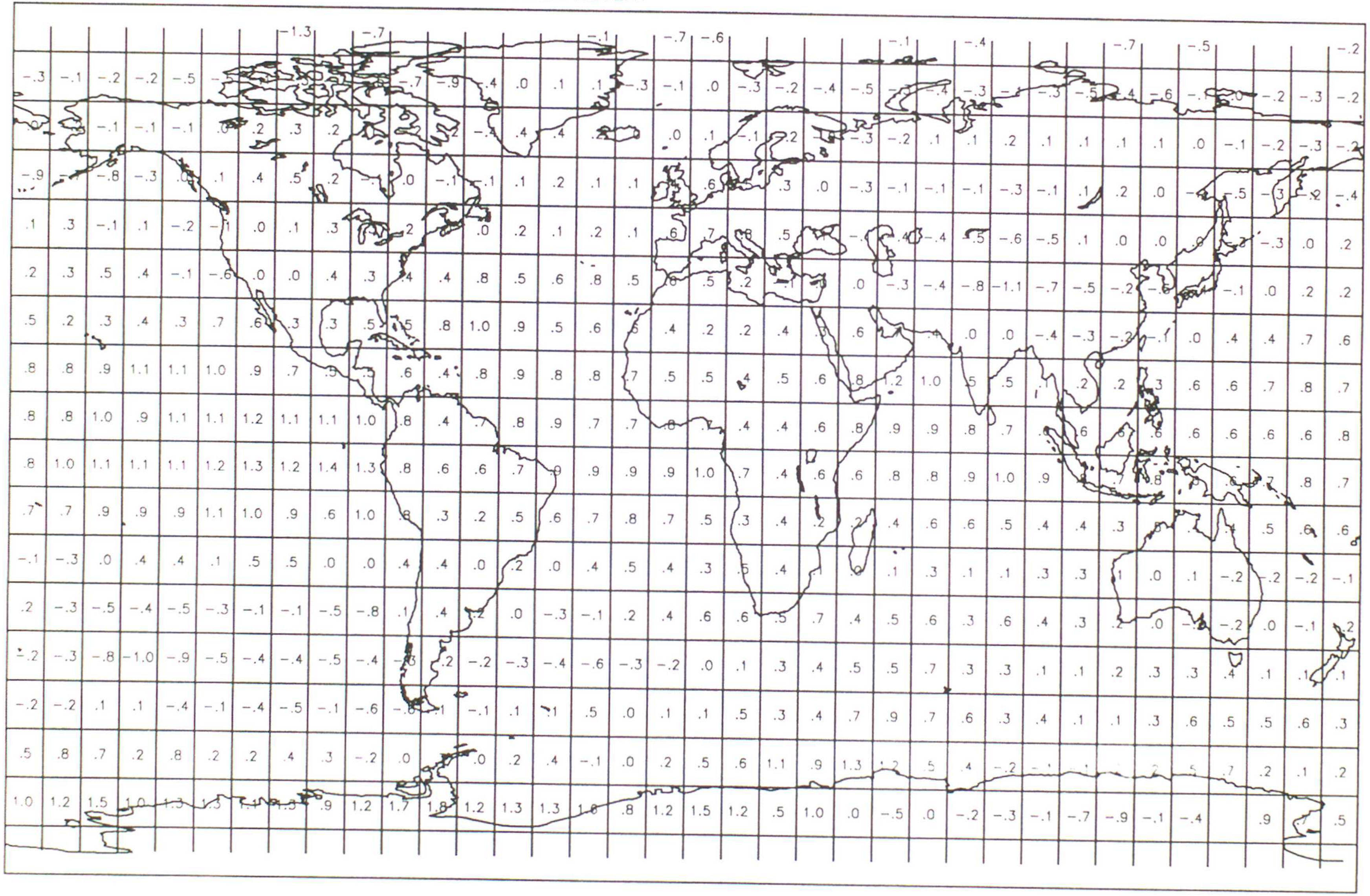
500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
SEPTEMBER 1997
NOAA-14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 28



500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
SEPTEMBER 1997
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 29



500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
SEPTEMBER 1997
NOAA-14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 30

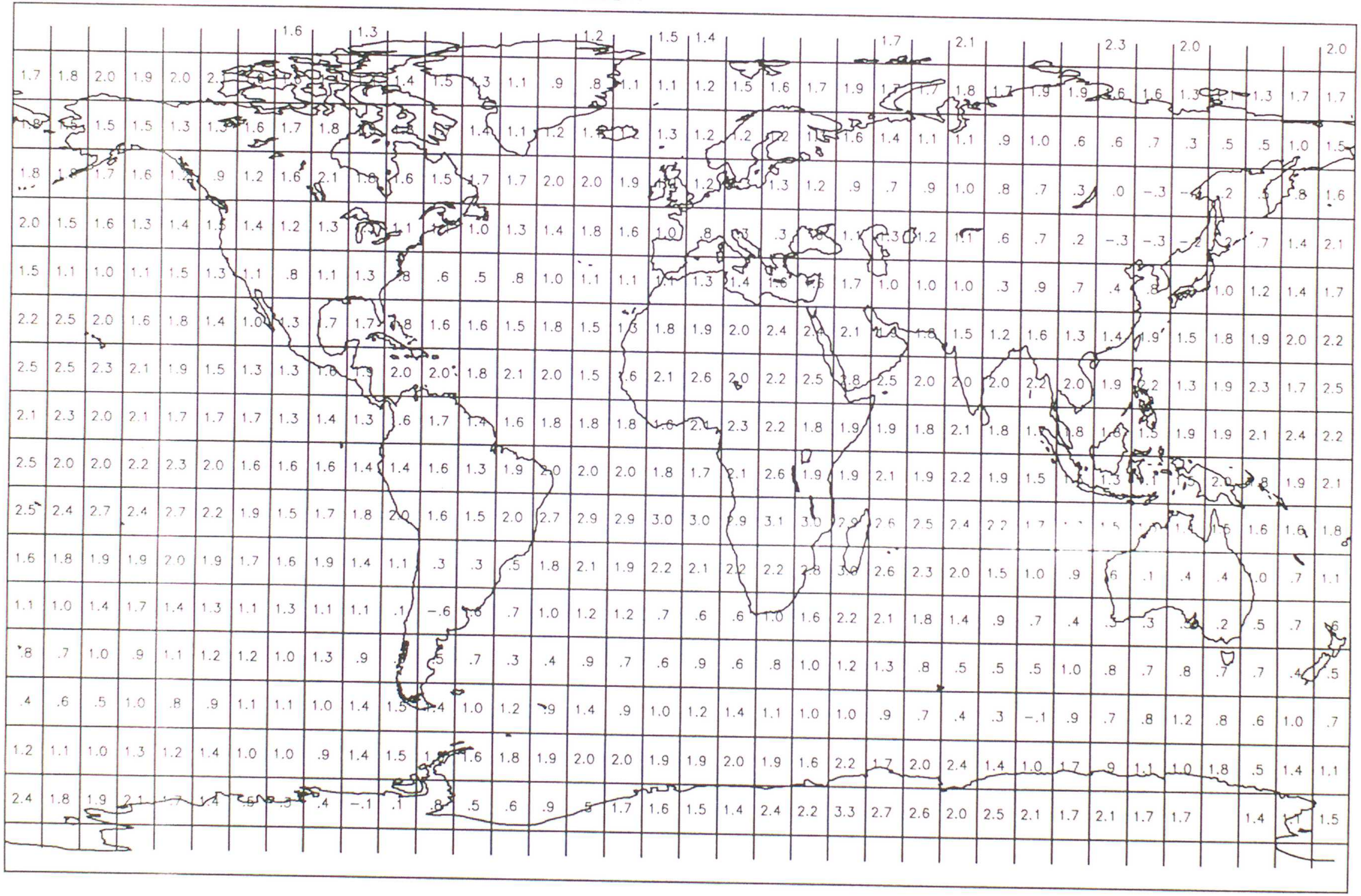

1.6 1.3 1.2 1.5 1.4 1.7 2.1 2.3 2.0 2.0
1.7 1.8 2.0 1.9 2.0 .4 1.5 .3 1.1 .9 .8 1.1 1.1 1.2 1.5 1.6 1.7 1.9 1.7 1.7 1.8 1.7 1.9 1.9 1.6 1.6 1.3 1.3 1.7 1.7
1.8 1.5 1.5 1.5 1.3 1.3 1.6 1.7 1.8 1.4 1.1 1.2 1.2 1.3 1.2 1.2 1.2 1.1 1.6 1.4 1.1 1.1 .9 1.0 .6 .6 .7 .3 .5 .5 1.0 1.5
1.8 1.8 1.7 1.6 1.2 .9 1.2 1.6 2.1 1.8 1.6 1.5 1.7 1.7 2.0 2.0 1.9 1.2 1.3 1.2 .9 .7 .9 1.0 .8 .7 .3 .0 -.3 -.4 .2 .5 .8 1.6
2.0 1.5 1.6 1.3 1.4 1.5 1.4 1.2 1.3 1.1 1.0 1.3 1.4 1.8 1.6 1.0 .8 .3 .3 1.1 1.3 1.2 1.1 .6 .7 .2 -.3 -.3 -.2 .2 .7 1.4 2.1
1.5 1.1 1.0 1.1 1.5 1.3 1.1 .8 1.1 1.3 .8 .6 .5 .8 1.0 1.1 1.1 1.1 1.3 1.4 1.6 1.5 1.7 1.0 1.0 1.0 .3 .9 .7 .4 .8 1.0 1.2 1.4 1.7
2.2 2.5 2.0 1.6 1.8 1.4 1.0 1.3 .7 1.7 1.8 1.6 1.6 1.5 1.8 1.5 1.3 1.8 1.9 2.0 2.4 2.4 2.1 1.4 1.8 1.5 1.2 1.6 1.3 1.4 1.9 1.5 1.8 1.9 2.0 2.2
2.5 2.5 2.3 2.1 1.9 1.5 1.3 1.3 1.6 1.9 2.0 2.0 1.8 2.1 2.0 1.5 1.6 2.1 2.6 2.0 2.2 2.5 1.8 2.5 2.0 2.0 2.0 2.2 2.0 1.9 2.2 1.3 1.9 2.3 1.7 2.5
2.1 2.3 2.0 2.1 1.7 1.7 1.7 1.3 1.4 1.3 1.6 1.7 1.4 1.6 1.8 1.8 1.8 1.6 2.1 2.3 2.2 1.8 1.9 1.9 1.8 2.1 1.8 1.5 1.8 1.6 1.5 1.9 1.9 2.1 2.4 2.2
2.5 2.0 2.0 2.2 2.3 2.0 1.6 1.6 1.6 1.4 1.4 1.6 1.3 1.9 2.0 2.0 2.0 1.8 1.7 2.1 2.6 1.9 1.9 2.1 1.9 2.2 1.9 1.5 1.5 1.3 1.1 1.5 2.0 1.8 1.9 2.1
2.5 2.4 2.7 2.4 2.7 2.2 1.9 1.5 1.7 1.8 2.0 1.6 1.5 2.0 2.7 2.9 2.9 3.0 3.0 2.9 3.1 3.0 2.9 2.6 2.5 2.4 2.2 1.7 1.5 1.6 1.6 1.8
1.6 1.8 1.9 1.9 2.0 1.9 1.7 1.6 1.9 1.4 1.1 .3 .3 .5 1.8 2.1 1.9 2.2 2.1 2.2 2.2 2.8 3.0 2.6 2.3 2.0 1.5 1.0 .9 .6 .1 .4 .4 .0 .7 1.1
1.1 1.0 1.4 1.7 1.4 1.3 1.1 1.3 1.1 1.1 .1 -.6 .6 .7 1.0 1.2 1.2 .7 .6 .6 1.0 1.6 2.2 2.1 1.8 1.4 .9 .7 .4 .3 .3 .3 .2 .5 .7 .6
.8 .7 1.0 .9 1.1 1.2 1.2 1.0 1.3 .9 .5 .7 .3 .4 .9 .7 .6 .9 .6 .8 1.0 1.2 1.3 .8 .5 .5 .5 1.0 .8 .7 .8 .7 .7 .4 .5
.4 .6 .5 1.0 .8 .9 1.1 1.1 1.0 1.4 1.5 .4 1.0 1.2 .9 1.4 .9 1.0 1.2 1.4 1.1 1.0 1.0 .9 .7 .4 .3 -.1 .9 .7 .8 1.2 .8 .6 1.0 .7
1.2 1.1 1.0 1.3 1.2 1.4 1.0 1.0 .9 1.4 1.5 1.6 1.6 1.8 1.9 2.0 2.0 1.9 1.9 2.0 1.9 1.6 2.2 1.7 2.0 2.4 1.4 1.0 1.7 .9 1.1 1.0 1.8 .5 1.4 1.1
2.4 1.8 1.9 2.1 1.7 1.4 .5 .3 .4 -.1 .1 .8 .5 .6 .9 .5 1.7 1.6 1.5 1.4 2.4 2.2 3.3 2.7 2.6 2.0 2.5 2.1 1.7 2.1 1.7 1.7 1.4 1.1 1.5

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored :Mean sea-level pressure (hPa)
:Wind speed (m s^{-1})
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 m s^{-1} (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
09709	17.9	-24.4	ALL	MSLP	SUR	7	0	0	0.4	1.0	1.1
13903	26.8	-40.3	ALL	MSLP	SUR	266	0	0	0.9	1.1	1.4
13905	22.6	-46.5	ALL	MSLP	SUR	152	0	0	0.9	1.1	1.5
13906	21.7	-51.1	ALL	MSLP	SUR	273	0	0	1.0	0.7	1.2
13910	26.0	-46.2	ALL	MSLP	SUR	275	0	0	0.9	-0.1	0.9
13911	27.9	-47.6	ALL	MSLP	SUR	276	0	0	0.8	0.9	1.2
13912	17.7	-61.8	ALL	MSLP	SUR	249	0	0	1.3	1.2	1.8
13913	19.8	-48.8	ALL	MSLP	SUR	243	0	0	1.1	1.0	1.5
41505	16.4	-54.3	ALL	MSLP	SUR	326	0	0	1.2	0.8	1.4
41506	17.0	-49.3	ALL	MSLP	SUR	342	0	0	1.0	0.8	1.3
41521	19.7	-54.7	ALL	MSLP	SUR	326	0	0	0.9	0.8	1.2
41524	11.6	-46.9	ALL	MSLP	SUR	339	0	0	1.1	0.4	1.2
41525	10.6	-38.5	ALL	MSLP	SUR	361	0	0	1.1	0.6	1.3
41529	33.4	-30.9	ALL	MSLP	SUR	255	0	0	0.8	0.3	0.9
41922	29.2	-54.3	ALL	MSLP	SUR	278	0	0	0.9	1.6	1.9
41924	24.2	-49.5	ALL	MSLP	SUR	274	0	0	0.9	-1.1	1.4
41943	16.0	-67.2	ALL	MSLP	SUR	186	0	0	1.0	1.0	1.4
42534	36.2	-75.7	ALL	MSLP	SUR	43	0	0	0.9	-0.1	0.9
44513	58.4	-8.5	ALL	MSLP	SUR	345	0	0	1.3	0.2	1.4
44605	47.2	-28.3	ALL	MSLP	SUR	855	0	0	1.0	0.7	1.2
44607	49.3	-33.3	ALL	MSLP	SUR	500	0	0	0.9	0.7	1.2
44608	54.0	-29.3	ALL	MSLP	SUR	999	0	0	1.4	0.8	1.6
44613	62.6	-29.0	ALL	MSLP	SUR	1050	23	2	1.7	0.1	1.7
44621	53.6	-36.3	ALL	MSLP	SUR	916	4	0	1.1	0.1	1.1
44624	57.0	-16.3	ALL	MSLP	SUR	1050	3	0	1.3	0.4	1.4
44726	60.6	-4.8	ALL	MSLP	SUR	1017	6	1	1.3	0.5	1.4
44727	58.0	-33.4	ALL	MSLP	SUR	1760	9	1	1.5	0.4	1.6
44728	59.7	-20.8	ALL	MSLP	SUR	1102	3	0	1.6	0.3	1.6
44742	39.5	-19.8	ALL	MSLP	SUR	556	2	0	0.9	0.4	1.0
44743	42.8	-12.7	ALL	MSLP	SUR	586	5	1	1.4	0.3	1.4
44760	33.4	-53.4	ALL	MSLP	SUR	324	0	0	1.0	0.2	1.0
44762	41.2	-19.0	ALL	MSLP	SUR	676	3	0	1.1	0.3	1.1
44768	57.1	-29.8	ALL	MSLP	SUR	1197	7	1	1.6	0.5	1.7
44769	50.7	-27.8	ALL	MSLP	SUR	954	7	1	1.3	0.2	1.3
44771	52.2	-38.9	ALL	MSLP	SUR	849	6	1	1.3	0.3	1.3
44773	61.0	-29.1	ALL	MSLP	SUR	1301	3	0	1.5	0.2	1.5
44775	63.1	-33.3	ALL	MSLP	SUR	1329	4	0	1.3	0.4	1.4
44777	51.4	-0.8	ALL	MSLP	SUR	48	0	0	0.7	-8.7	8.8
44779	45.7	-27.9	ALL	MSLP	SUR	51	4	8	1.0	0.5	1.1
44901	56.5	-55.1	ALL	MSLP	SUR	136	1	1	1.4	0.8	1.6
44911	56.7	-17.5	ALL	MSLP	SUR	44	0	0	0.9	0.5	1.0
44912	51.9	-40.8	ALL	MSLP	SUR	141	0	0	1.2	0.9	1.5
44925	60.2	-50.4	ALL	MSLP	SUR	138	1	1	1.4	1.2	1.9
62503	30.1	-15.9	ALL	MSLP	SUR	82	0	0	0.7	0.3	0.7
62513	44.8	-16.3	ALL	MSLP	SUR	440	0	0	0.9	0.3	0.9
62515	45.5	-18.3	ALL	MSLP	SUR	646	0	0	1.2	0.3	1.3
62518	39.1	-12.7	ALL	MSLP	SUR	126	0	0	1.5	0.6	1.6
62552	54.6	-10.9	ALL	MSLP	SUR	831	5	1	1.7	-0.2	1.7
62553	48.5	-22.4	ALL	MSLP	SUR	711	3	0	1.5	0.3	1.5
62554	53.0	-15.6	ALL	MSLP	SUR	734	0	0	1.2	0.8	1.4
62555	44.9	-17.9	ALL	MSLP	SUR	724	0	0	0.9	0.0	0.9
62556	48.4	-18.3	ALL	MSLP	SUR	846	2	0	1.2	0.2	1.2
62557	47.5	-20.5	ALL	MSLP	SUR	451	0	0	1.2	0.2	1.2
62558	49.6	-21.2	ALL	MSLP	SUR	423	2	0	1.2	0.5	1.3
62570	46.1	-16.8	ALL	MSLP	SUR	92	0	0	1.4	-0.1	1.4
62697	51.6	-32.9	ALL	MSLP	SUR	793	39	5	2.6	0.0	2.6
62712	56.7	-8.7	ALL	MSLP	SUR	845	1	0	1.2	0.7	1.4
62713	38.7	-28.0	ALL	MSLP	SUR	436	1	0	1.5	-1.1	1.9
62803	62.2	-11.0	ALL	MSLP	SUR	1674	2	0	1.7	0.2	1.7
62804	57.7	-10.5	ALL	MSLP	SUR	969	2	0	1.2	0.3	1.3

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
62927	52.0	-22.7	ALL	MSLP	SUR	122	0	0	1.1	0.9	1.4
64528	61.8	-39.0	ALL	MSLP	SUR	1640	0	0	1.5	-0.2	1.5
64561	53.5	-45.0	ALL	MSLP	SUR	872	2	0	1.4	0.2	1.4
64563	60.5	-52.0	ALL	MSLP	SUR	1549	3	0	1.6	-0.3	1.6
65593	60.0	-24.1	ALL	MSLP	SUR	7	0	0	1.6	-1.2	2.0
65594	60.6	-19.7	ALL	MSLP	SUR	1836	3	0	1.7	0.3	1.7
65596	51.6	-47.8	ALL	MSLP	SUR	662	1	0	1.4	-0.1	1.4
65597	58.3	-45.8	ALL	MSLP	SUR	1498	6	0	1.7	-0.1	1.7
94563	60.8	-52.8	ALL	MSLP	SUR	1	1	100	0.0	0.0	0.0
WIND SPEED											
09709	17.9	-24.4	ALL	SPEED	SUR	7	0	0	5.9	3.9	7.1
41505	16.4	-54.3	ALL	SPEED	SUR	126	0	0	3.8	0.9	3.9
41506	17.0	-49.3	ALL	SPEED	SUR	131	0	0	1.6	-0.1	1.6
41521	19.7	-54.7	ALL	SPEED	SUR	121	3	2	3.1	1.0	3.3
41524	11.6	-46.9	ALL	SPEED	SUR	138	1	1	1.8	0.2	1.8
41525	10.6	-38.5	ALL	SPEED	SUR	143	0	0	2.3	0.7	2.5
44621	53.6	-36.3	ALL	SPEED	SUR	319	3	1	1.7	-0.7	1.9
44624	57.0	-16.3	ALL	SPEED	SUR	755	1	0	2.1	-1.2	2.4
44726	60.6	-4.8	ALL	SPEED	SUR	636	4	1	3.1	-3.4	4.6
44742	39.5	-19.8	ALL	SPEED	SUR	479	0	0	2.1	-0.1	2.1
44762	41.2	-19.0	ALL	SPEED	SUR	415	1	0	1.5	-0.7	1.7
44773	61.0	-29.1	ALL	SPEED	SUR	1258	0	0	2.0	-0.9	2.2
44783	62.3	-26.5	ALL	SPEED	SUR	1	0	0	0.0	-3.7	3.7
62552	54.6	-10.9	ALL	SPEED	SUR	821	0	0	1.7	-0.9	1.9
62553	48.5	-22.4	ALL	SPEED	SUR	686	0	0	2.0	-0.2	2.0
62558	49.6	-21.2	ALL	SPEED	SUR	1	0	0	0.0	-5.9	5.9
62559	43.9	-17.9	ALL	SPEED	SUR	126	0	0	1.4	0.1	1.4
62560	49.9	-17.9	ALL	SPEED	SUR	18	0	0	1.7	-0.2	1.8
62562	48.3	-18.0	ALL	SPEED	SUR	264	0	0	2.4	0.1	2.4
62563	48.7	-17.4	ALL	SPEED	SUR	267	0	0	2.3	0.4	2.4
62564	48.1	-17.9	ALL	SPEED	SUR	214	0	0	2.2	-0.4	2.2
62565	51.7	-19.0	ALL	SPEED	SUR	302	0	0	1.9	-0.4	1.9
62566	42.7	-18.0	ALL	SPEED	SUR	139	0	0	1.5	0.2	1.5
62567	45.4	-16.8	ALL	SPEED	SUR	169	0	0	1.5	-0.3	1.6
62568	49.5	-17.8	ALL	SPEED	SUR	19	0	0	1.3	-2.0	2.4
62569	45.2	-18.3	ALL	SPEED	SUR	131	0	0	1.5	0.0	1.5
62570	46.1	-16.8	ALL	SPEED	SUR	269	0	0	1.5	-0.7	1.7
62803	62.2	-11.0	ALL	SPEED	SUR	9	2	22	8.3	-4.2	9.3
64528	61.8	-39.0	ALL	SPEED	SUR	1	0	0	0.0	1.7	1.7
WIND DIRECTION											
09709	17.9	-24.4	ALL	DIRN.	SUR	7	0	0	8.1	17.6	19.3
41505	16.4	-54.3	ALL	DIRN.	SUR	97	0	0	19.2	31.4	36.8
41506	17.0	-49.3	ALL	DIRN.	SUR	97	0	0	14.4	6.8	15.9
41521	19.7	-54.7	ALL	DIRN.	SUR	102	3	3	26.2	-9.4	27.8
41524	11.6	-46.9	ALL	DIRN.	SUR	93	1	1	30.8	37.8	48.7
41525	10.6	-38.5	ALL	DIRN.	SUR	67	0	0	39.6	8.2	40.5
44621	53.6	-36.3	ALL	DIRN.	SUR	286	3	1	27.1	-48.2	55.3
44624	57.0	-16.3	ALL	DIRN.	SUR	703	1	0	21.9	6.7	22.9
44726	60.6	-4.8	ALL	DIRN.	SUR	582	4	1	55.1	24.3	60.3
44742	39.5	-19.8	ALL	DIRN.	SUR	266	0	0	25.2	3.2	25.4
44762	41.2	-19.0	ALL	DIRN.	SUR	234	1	0	24.9	4.6	25.4
44773	61.0	-29.1	ALL	DIRN.	SUR	1190	0	0	28.3	-10.7	30.3
44783	62.3	-26.5	ALL	DIRN.	SUR	1	0	0	0.0	-1.9	1.9
62552	54.6	-10.9	ALL	DIRN.	SUR	678	0	0	16.7	-0.5	16.7
62553	48.5	-22.4	ALL	DIRN.	SUR	507	0	0	15.8	-0.2	15.8
62558	49.6	-21.2	ALL	DIRN.	SUR	1	0	0	0.0	123.9	123.9
62559	43.9	-17.9	ALL	DIRN.	SUR	66	0	0	12.8	-27.4	30.2
62560	49.9	-17.9	ALL	DIRN.	SUR	18	0	0	92.0	-0.1	92.0
62562	48.3	-18.0	ALL	DIRN.	SUR	194	0	0	24.5	5.5	25.1
62563	48.7	-17.4	ALL	DIRN.	SUR	199	0	0	24.5	-21.3	32.5

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND DIRECTION											
62564	48.1	-17.9	ALL	DIRN.	SUR	157	0	0	18.3	-1.7	18.3
62565	51.7	-19.0	ALL	DIRN.	SUR	212	0	0	23.5	-9.9	25.5
62566	42.7	-18.0	ALL	DIRN.	SUR	57	0	0	20.8	-1.1	20.8
62567	45.4	-16.8	ALL	DIRN.	SUR	98	0	0	16.1	-8.7	18.3
62568	49.5	-17.8	ALL	DIRN.	SUR	17	0	0	52.5	-33.8	62.4
62569	45.2	-18.3	ALL	DIRN.	SUR	81	0	0	13.4	-18.1	22.6
62570	46.1	-16.8	ALL	DIRN.	SUR	190	0	0	15.2	3.2	15.5
62803	62.2	-11.0	ALL	DIRN.	SUR	9	2	22	68.0	23.3	71.9
64528	61.8	-39.0	ALL	DIRN.	SUR	1	0	0	0.0	43.1	43.1

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:40°N - 70°N, 60°W - 0°W.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.
GROSS ERROR LIMITS	:10.0 °C ; 60 m s^{-1} Vector Wind	
SELECTION CRITERIA	:N REP $\geq$ 20	

IDENT.	N.REP.	TEMPERATURE PG	PR	RMS	BIAS	N.REP.	WIND PG	PR	PC	RMS	BIAS
AAL	3201	0	1	1.8	0.0	3245	0	3	0	8.7	0.8
ACA	1820	0	1	1.8	0.0	1849	0	1	0	7.9	0.8
AEA	478	1	100	2.5	0.6	486	0	6	0	10.5	1.3
AEL	324	0	2	1.5	-0.4	323	0	3	0	7.5	1.2
AFL	241	2	5	1.8	0.6	243	0	6	0	10.0	-0.1
AFR	944	1	7	1.8	0.2	969	0	8	0	8.9	0.8
AIH	247	1	2	1.5	0.0	241	0	5	0	9.6	1.0
AJM	41	0	0	1.5	0.0	38	0	0	0	8.6	2.8
AMT	37	0	43	1.9	0.6	37	0	16	0	13.3	0.7
AMX	194	0	1	1.6	0.3	197	0	3	0	8.3	1.2
ANZ	234	0	2	2.1	-0.7	237	0	2	0	8.4	0.0
AOM	203	0	3	1.8	0.9	215	0	4	0	8.1	1.6
AUA	38	0	3	1.6	-0.9	38	0	3	0	8.2	2.8
AVA	152	1	4	2.0	0.1	154	0	5	0	9.6	1.2
AZA	453	1	6	2.0	0.1	454	0	6	0	9.3	0.2
BAL	494	0	11	1.8	-0.4	509	0	12	0	8.3	1.8
BAW	1352	0	11	1.8	0.0	1381	0	11	0	8.1	0.8
BWA	69	1	100	4.0	3.1	74	0	5	0	8.9	0.8
CDN	493	0	1	1.8	0.0	494	0	1	0	7.8	0.5
CFC	33	0	18	1.8	0.1	31	0	23	0	9.2	2.4
CFG	669	0	1	1.8	-0.9	686	0	2	0	8.2	0.9
CKS	26	12	12	1.3	0.9	29	0	3	0	9.7	0.0
CKT	143	1	3	1.8	0.8	146	0	5	0	10.7	1.1
CLX	271	0	1	1.9	-0.2	267	0	0	0	6.2	0.5
CMM	388	0	1	2.0	0.0	394	0	2	0	7.8	0.7
COA	894	1	3	1.9	0.5	905	0	6	0	10.3	1.6
CRL	165	1	3	2.0	0.6	171	0	2	0	8.8	1.3
CSA	33	3	3	1.8	-0.9	33	0	3	0	6.6	-0.5
CTB	193	0	1	1.6	0.0	198	0	4	0	9.8	2.0
CUB	267	2	8	2.2	1.0	268	0	10	0	9.6	1.5
DAL	3095	0	2	1.8	0.1	3150	0	3	0	8.3	0.7
DHL	196	5	100	3.2	-0.6	196	0	7	2	10.8	0.7
DLH	2450	0	10	1.8	0.1	2477	0	12	1	7.8	0.6
DOA	20	0	5	2.5	-0.4	20	0	5	0	12.4	2.8
EIN	44	0	5	2.1	-0.1	52	0	15	0	14.0	0.6
ELY	154	1	8	1.8	-0.1	156	1	5	0	8.6	0.5
EWW	118	3	41	3.0	1.7	119	1	100	0	11.5	1.9
FDX	270	1	3	1.6	0.5	275	0	2	0	7.9	0.4
FIN	385	0	1	2.0	0.5	386	0	2	1	8.1	0.7
GAF	117	0	0	1.7	-0.3	113	0	1	0	7.3	0.7
GTI	28	0	0	1.0	0.0	29	0	0	0	8.6	-2.2
HLF	97	0	4	1.7	-0.8	102	0	5	0	8.0	1.2
IBE	1208	1	18	2.0	0.9	1227	0	20	0	9.5	1.2
ICE	758	0	1	1.9	0.2	755	0	1	0	7.7	-0.2
KLM	2282	0	2	1.8	0.2	2328	0	3	0	8.2	0.9
LDA	121	0	5	1.5	-0.9	130	0	7	0	8.5	0.7
LDI	315	0	21	2.4	0.0	323	0	23	0	9.2	1.0
LIB	53	0	2	1.8	1.2	54	0	4	0	11.0	0.4
LKR	49	0	0	1.5	0.9	51	0	0	0	6.5	0.6
LOT	376	0	2	2.3	-0.9	375	0	3	0	9.0	-0.4
LTU	579	0	4	1.6	0.3	582	0	6	0	8.2	1.0
MON	30	3	3	1.9	0.9	27	0	0	0	5.6	1.5
MPD	118	1	4	2.3	1.0	113	0	2	0	6.9	1.1
MPH	632	0	2	1.8	-0.2	664	0	3	0	8.7	0.8
NWA	3330	1	2	2.0	0.7	3420	0	3	0	8.8	0.6
RAM	61	0	2	2.0	-0.6	61	0	5	0	10.3	0.8
RCH	148	2	100	2.1	0.6	154	1	100	0	11.9	2.1
RJA	94	0	2	2.1	1.2	94	0	7	0	11.3	-0.6
ROY	395	1	2	1.9	0.0	406	0	3	0	8.6	0.3

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RRR	99	1	19	2.2	0.0	99	0	19	0	10.5	1.8
SAB	28	0	11	2.2	-0.6	28	0	7	0	10.4	0.9
SAS	1173	0	1	2.0	0.1	1168	0	2	0	8.2	0.4
SHE	23	4	9	3.7	3.1	23	0	4	0	6.4	0.9
SIA	98	1	6	2.3	-0.4	101	0	6	0	8.8	-0.3
SLR	102	0	23	1.7	-0.5	106	0	23	0	10.3	0.7
SPP	59	2	5	2.1	0.8	60	0	8	0	8.2	0.7
SSV	134	0	2	2.0	0.0	137	0	0	0	6.9	-0.4
SVA	144	1	9	2.0	-0.1	153	0	100	0	13.8	2.2
SWR	159	1	4	1.6	0.1	163	0	5	0	8.9	1.5
TAP	368	1	5	1.7	-0.1	361	0	8	0	9.3	1.1
TOW	184	0	3	1.6	-0.1	186	1	5	0	9.7	-0.6
TSC	163	1	4	2.1	1.1	163	0	2	0	8.3	1.4
TWA	1870	0	3	2.1	0.4	1890	0	3	0	8.4	1.3
UAL	1685	0	2	2.0	0.1	1712	0	2	0	7.6	0.9
ULE	203	0	2	1.6	0.2	199	1	3	1	7.5	-0.1
UPS	227	0	14	1.5	0.4	228	0	15	0	8.9	1.3
USA	391	1	2	2.1	0.3	396	0	2	0	8.6	1.7
VIR	203	0	3	1.9	-0.2	210	0	3	0	8.3	0.8
VKG	68	0	1	2.0	0.8	65	0	2	0	11.4	1.5
WOA	65	0	12	2.0	1.1	68	0	9	0	6.8	0.8
BA	5614	0	0	1.3	0.5	5614	0	6	0	6.9	1.1
KL	3289	0	32	1.4	0.7	3290	0	32	0	6.6	1.1
LH	373	0	1	1.7	0.0	371	0	2	1	7.3	0.8
SV	60	100	100	46.3	-32.8	60	0	67	0	20.9	5.6
N	501	2	4	2.7	0.9	518	0	3	0	9.8	0.8
U	9430	0	0	1.3	0.1	9430	0	0	0	7.0	0.9

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	9	0	14.4	14.8	3.2
DBBH	12	Z	100	8	0	19.0	19.4	3.8
DBLK	00	Z	100	1	0	0.0	41.0	41.0
DBLK	12	Z	100	27	0	19.1	21.4	9.7
EHOA	00	Z	100	1	0	0.0	56.0	56.0
FNOR	00	Z	100	11	0	16.5	19.4	10.1
FNOR	12	Z	100	10	0	16.7	22.4	14.9
FNOU	00	Z	100	13	0	10.5	15.0	10.7
FNOU	12	Z	100	12	0	11.1	13.3	7.3
FNPH	00	Z	100	14	0	17.9	18.8	-5.8
FNPH	12	Z	100	14	0	17.7	18.5	-5.6
FNR	00	Z	100	1	0	0.0	31.0	31.0
FNRS	00	Z	100	14	0	11.8	11.9	-1.9
FNRS	12	Z	100	12	0	9.5	12.0	-7.3
JBOA	00	Z	100	1	0	0.0	2.0	2.0
LDWR	00	Z	100	28	0	12.0	13.5	-6.0
LDWR	12	Z	100	26	0	11.0	14.1	-8.8
OXVH2	00	Z	100	18	0	17.8	17.8	-0.9
OXVH2	12	Z	100	21	0	17.3	18.4	6.4
OXYH2	00	Z	100	17	0	16.9	18.5	-7.6
OXYH2	12	Z	100	18	0	21.3	21.8	4.6
SHIP	00	Z	100	3	0	7.4	16.4	14.7
SHIP	12	Z	100	1	0	0.0	74.0	74.0
SHIPBM	00	Z	100	1	0	0.0	6.0	-6.0
SHIPBM	12	Z	100	1	0	0.0	68.0	68.0
SHIPS	00	Z	100	7	0	12.4	18.2	13.3
SHIPS	12	Z	100	8	0	23.3	62.2	57.6
V2EZ	00	Z	100	10	0	11.2	15.3	10.4
V2EZ	12	Z	100	10	0	20.5	24.2	12.9
V2VM	00	Z	100	15	8	12.8	13.0	2.3
V2VM	12	Z	100	16	6	11.5	13.1	-6.3
WTEC	00	Z	100	1	0	0.0	8.0	-8.0
XXBA	00	Z	100	1	0	0.0	41.0	-41.0
XXBA	12	Z	100	10	0	20.1	39.7	34.2
ZDLP	12	Z	100	2	0	1.5	133.5	133.5
03953	00	Z	100	30	0	12.7	14.5	7.0
03953	12	Z	100	30	0	12.0	12.1	1.6
04018	00	Z	100	30	0	20.2	27.4	18.5
04018	12	Z	100	29	0	15.6	29.5	25.0
04220	00	Z	100	29	0	16.0	19.5	11.2
04220	12	Z	100	29	0	15.4	19.4	11.7
04270	00	Z	100	29	0	16.5	16.8	3.3
04270	12	Z	100	27	0	18.1	20.1	8.7
04339	00	Z	100	28	0	20.6	21.1	4.6
04339	12	Z	100	29	0	10.0	12.5	7.6
04360	00	Z	100	26	0	12.6	16.1	10.0
04360	12	Z	100	27	0	52.1	55.8	20.0
08001	00	Z	100	28	0	12.2	12.4	2.4
08001	12	Z	100	29	1	15.8	16.3	-4.2
08508	00	Z	100	28	1	12.7	13.7	5.2
08508	12	Z	100	30	0	14.6	14.7	-0.8
08522	00	Z	100	27	0	12.2	20.4	16.4
08522	12	Z	100	29	0	10.6	16.1	12.0
60020	00	Z	100	29	0	12.3	30.1	27.4
60020	12	Z	100	30	0	16.8	24.4	17.7
71600	00	Z	100	29	0	11.0	11.5	3.3
71600	12	Z	100	30	0	11.7	13.1	-5.8
72201	00	Z	100	24	0	14.9	15.1	-2.6
72201	12	Z	100	26	0	16.4	17.5	6.3
72402	00	Z	100	28	0	16.8	17.2	3.5
72402	12	Z	100	29	0	42.4	45.7	16.9
74494	00	Z	100	23	0	37.1	37.9	-7.6
74494	12	Z	100	28	0	17.5	36.3	31.8
78016	00	Z	100	22	0	14.8	14.9	1.7
78016	12	Z	100	23	0	16.7	16.8	1.7

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures:

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	9	0	10.4	13.7	9.0
DBBH	12	Z	500	9	0	15.1	16.1	5.6
DBLK	00	Z	500	1	0	0.0	20.0	-20.0
DBLK	12	Z	500	27	0	31.6	31.9	-4.7
EHOA	00	Z	500	1	0	0.0	23.0	23.0
EHOA	12	Z	500	2	0	10.0	12.8	8.0
FNOR	00	Z	500	12	0	9.1	16.3	13.5
FNOR	12	Z	500	13	0	10.2	18.3	15.2
FNOU	00	Z	500	13	0	9.8	14.8	11.2
FNOU	12	Z	500	12	0	10.1	13.6	9.0
FNPH	00	Z	500	14	0	6.6	8.2	4.9
FNPH	12	Z	500	15	0	6.7	7.1	2.3
FNR	00	Z	500	1	0	0.0	4.0	4.0
FNRS	00	Z	500	15	0	8.2	8.3	-0.7
FNRS	12	Z	500	15	0	7.2	7.4	1.9
JBOA	00	Z	500	1	0	0.0	7.0	7.0
LDWR	00	Z	500	28	0	14.2	14.2	-0.3
LDWR	12	Z	500	27	0	17.4	17.6	2.3
OXVH2	00	Z	500	22	0	14.9	15.6	4.5
OXVH2	12	Z	500	21	0	13.7	16.4	9.0
OXYH2	00	Z	500	18	0	12.5	12.5	-0.9
OXYH2	12	Z	500	19	0	15.1	15.3	2.4
SHIP	00	Z	500	3	0	5.0	11.2	10.0
SHIP	12	Z	500	1	0	0.0	9.0	-9.0
SHIPBM	00	Z	500	1	0	0.0	10.0	-10.0
SHIPBM	12	Z	500	1	0	0.0	15.0	15.0
SHIPS	00	Z	500	7	0	7.0	15.9	14.3
SHIPS	12	Z	500	9	0	11.5	21.5	18.1
V2EZ	00	Z	500	11	0	7.1	13.4	11.4
V2EZ	12	Z	500	10	0	15.2	19.7	12.5
V2VM	00	Z	500	22	1	22.5	26.4	13.9
V2VM	12	Z	500	22	1	47.8	52.9	22.6
WTEC	00	Z	500	1	0	0.0	4.0	-4.0
XXBA	12	Z	500	14	0	9.4	11.0	5.8
ZDLP	12	Z	500	2	0	2.0	98.0	98.0
03953	00	Z	500	30	0	10.8	13.5	8.2
03953	12	Z	500	30	0	8.4	11.7	8.2
04018	00	Z	500	30	0	13.7	17.3	10.5
04018	12	Z	500	30	0	11.1	13.9	8.4
04220	00	Z	500	29	0	12.6	13.1	3.5
04220	12	Z	500	29	0	12.6	13.7	5.5
04270	00	Z	500	30	0	16.0	19.0	10.2
04270	12	Z	500	28	0	18.7	20.8	9.2
04339	00	Z	500	28	0	19.8	19.8	-0.4
04339	12	Z	500	29	0	12.1	12.1	-1.1
04360	00	Z	500	27	0	12.3	12.4	1.1
04360	12	Z	500	26	1	12.1	12.5	3.0
08001	00	Z	500	29	0	10.2	11.0	3.9
08001	12	Z	500	30	0	9.2	10.0	-4.0
08508	00	Z	500	29	0	17.9	18.7	5.3
08508	12	Z	500	30	0	11.2	11.2	0.4
08522	00	Z	500	27	0	6.3	13.4	11.8
08522	12	Z	500	29	0	7.2	10.5	7.7
60020	00	Z	500	29	0	8.1	23.5	22.1
60020	12	Z	500	30	0	10.0	21.6	19.2
71600	00	Z	500	29	0	9.5	9.7	2.3
71600	12	Z	500	30	0	9.1	9.2	1.2
72201	00	Z	500	25	0	10.9	11.3	3.1
72201	12	Z	500	27	0	11.9	12.1	1.8
72402	00	Z	500	29	0	8.8	10.0	4.8
72402	12	Z	500	29	0	11.7	11.7	-0.4
74494	00	Z	500	29	0	14.0	14.1	1.2
74494	12	Z	500	29	0	11.0	11.0	-0.5
78016	00	Z	500	23	0	13.5	16.1	8.8
78016	12	Z	500	22	0	10.5	14.6	10.1

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	9	0	0	0.0	-0.9	0.5
DBBH	12	V	100	7	0	0	0.0	-1.7	-0.2
DBLK	00	V	100	1	0	0	0.0	0.7	0.1
DBLK	12	V	100	22	0	0	0.0	0.1	-0.8
EHOA	00	V	100	1	0	0	1.8	1.9	1.5
FNOR	00	V	100	10	0	0	1.8	-1.7	0.3
FNOR	12	V	100	10	0	0	3.3	-0.3	0.6
FNOU	00	V	100	12	0	0	2.6	0.2	-0.7
FNOU	12	V	100	11	0	0	2.3	-0.3	-0.2
FNPH	00	V	100	14	0	0	2.3	-1.0	0.3
FNPH	12	V	100	14	0	0	3.5	-1.1	0.7
FNR	00	V	100	1	0	0	3.0	1.5	-0.1
FNRS	00	V	100	14	0	0	3.0	-0.7	0.1
FNRS	12	V	100	11	0	0	2.3	0.8	0.3
LDWR	00	V	100	27	0	0	3.6	0.7	-0.3
LDWR	12	V	100	26	0	0	2.0	-1.1	-0.9
OXVH2	00	V	100	16	0	0	2.0	-0.7	0.8
OXVH2	12	V	100	21	0	0	2.9	-1.2	0.4
OXYH2	00	V	100	17	0	0	3.0	-1.2	1.0
OXYH2	12	V	100	17	0	0	1.8	-1.8	0.5
SHIP	12	V	100	1	0	0	2.9	-12.4	2.4
SHIPBM	00	V	100	1	0	0	2.9	2.8	4.6
SHIPS	00	V	100	4	0	0	2.9	3.8	-1.3
SHIPS	12	V	100	4	0	25	2.9	6.7	2.6
V2EZ	00	V	100	10	0	0	2.9	0.1	0.3
V2EZ	12	V	100	9	0	0	3.3	-0.3	-1.6
V2VM	00	V	100	22	0	0	3.3	-0.4	1.1
V2VM	12	V	100	22	0	0	3.7	-2.3	1.9
WTEC	00	V	100	1	0	0	3.4	-0.1	1.7
XXBA	00	V	100	1	0	0	2.7	-1.9	0.6
XXBA	12	V	100	4	0	0	2.7	-4.2	-1.8
03953	00	V	100	30	0	0	2.5	0.3	1.5
03953	12	V	100	29	0	0	1.6	-0.7	1.4
04018	00	V	100	30	0	0	2.1	-0.1	-1.3
04018	12	V	100	29	0	0	2.1	-1.0	-1.1
04220	00	V	100	29	0	0	2.1	0.5	0.9
04220	12	V	100	29	0	0	1.8	0.8	1.2
04270	00	V	100	29	0	0	2.7	-0.2	1.5
04270	12	V	100	27	0	0	3.7	-1.2	0.5
04339	00	V	100	27	0	0	2.3	0.6	0.0
04339	12	V	100	28	0	0	2.2	0.3	-0.6
04360	00	V	100	25	0	0	1.9	0.2	0.5
04360	12	V	100	26	0	0	3.0	-0.1	-0.7
08001	00	V	100	26	0	0	3.3	1.3	1.7
08001	12	V	100	26	0	0	2.9	1.0	1.2
08508	00	V	100	29	0	0	2.5	2.3	0.0
08508	12	V	100	29	0	0	3.1	0.0	-0.1
08522	00	V	100	27	0	0	2.1	1.8	0.1
08522	12	V	100	28	0	0	2.8	0.6	0.3
60020	00	V	100	27	0	0	4.2	-0.3	0.0
60020	12	V	100	29	0	0	3.4	-1.2	-0.6
71600	00	V	100	29	0	0	3.5	0.0	-0.9
71600	12	V	100	30	0	0	2.9	0.0	0.6
72201	00	V	100	22	0	0	2.7	0.1	0.6
72201	12	V	100	26	0	0	3.1	0.0	-0.8
72402	00	V	100	28	0	0	2.2	-0.9	0.0
72402	12	V	100	29	0	0	2.3	0.0	0.4
74494	00	V	100	22	0	0	2.5	-0.1	0.0
74494	12	V	100	28	0	0	2.2	0.3	1.0
78016	00	V	100	21	0	0	4.0	1.7	0.5
78016	12	V	100	20	0	0	3.7	-0.5	-0.2

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in $m\ s^{-1}$
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	9	0	0	0.0	-0.7	-0.9
DBBH	12	V	500	9	0	0	0.0	-1.4	2.0
DBLK	00	V	500	1	0	0	0.0	-3.1	-0.2
DBLK	12	V	500	24	1	4	0.0	0.5	2.5
EHOA	00	V	500	1	0	0	4.5	-5.8	-1.9
EHOA	12	V	500	1	0	100	4.5	-1.1	6.3
FNOR	00	V	500	11	0	0	4.5	1.3	0.7
FNOR	12	V	500	13	0	0	2.7	-1.1	0.0
FNOU	00	V	500	12	0	0	3.8	0.2	1.8
FNOU	12	V	500	10	0	0	2.5	-1.7	-0.1
FNPH	00	V	500	14	0	0	2.4	0.5	-1.4
FNPH	12	V	500	15	0	0	3.1	-1.8	-0.7
FNR	00	V	500	1	0	0	3.0	0.6	3.1
FNRS	00	V	500	15	0	0	3.0	0.2	-1.0
FNRS	12	V	500	12	0	0	2.6	-0.9	-0.6
JBOA	00	V	500	1	0	0	3.4	0.5	0.1
LDWR	00	V	500	28	0	0	3.0	0.2	0.5
LDWR	12	V	500	27	0	3	3.5	0.2	0.8
OXVH2	00	V	500	21	0	0	3.7	-0.2	0.2
OXVH2	12	V	500	20	0	0	4.5	-0.8	0.4
OXYH2	00	V	500	18	0	0	4.7	-1.0	-0.3
OXYH2	12	V	500	19	0	0	3.1	-1.3	-0.2
SHIP	00	V	500	2	0	0	3.8	4.7	-5.5
SHIP	12	V	500	1	0	0	3.8	-8.9	1.5
SHIPBM	00	V	500	1	0	0	3.8	-3.1	-2.7
SHIPS	00	V	500	7	0	0	3.8	6.1	-2.9
SHIPS	12	V	500	7	0	14	3.8	2.6	2.4
V2EZ	00	V	500	11	0	0	3.8	-0.9	-1.6
V2EZ	12	V	500	9	0	0	2.0	0.1	0.2
V2VM	00	V	500	23	0	0	2.0	-1.4	0.1
V2VM	12	V	500	23	0	0	3.1	-2.0	0.7
WTEC	00	V	500	1	0	0	3.8	-1.1	-0.4
XXBA	12	V	500	14	0	0	2.4	1.5	0.6
03953	00	V	500	30	0	0	1.8	0.6	0.8
03953	12	V	500	30	0	0	3.0	-0.4	0.4
04018	00	V	500	30	0	0	3.3	-0.1	-2.4
04018	12	V	500	29	0	0	3.7	1.0	-1.3
04220	00	V	500	29	0	0	5.7	-0.1	-0.2
04220	12	V	500	29	0	0	3.2	0.1	-0.1
04270	00	V	500	30	0	0	2.4	-0.4	0.3
04270	12	V	500	28	0	0	2.9	0.5	0.6
04339	00	V	500	28	0	0	4.6	0.5	0.6
04339	12	V	500	28	0	0	4.4	-0.1	1.0
04360	00	V	500	27	0	0	3.1	0.8	-2.1
04360	12	V	500	27	0	3	3.2	0.5	-0.7
08001	00	V	500	29	0	0	2.9	1.0	0.3
08001	12	V	500	29	0	0	2.6	-0.1	-0.5
08508	00	V	500	29	0	0	2.6	1.1	-0.5
08508	12	V	500	29	0	0	3.3	-0.1	0.0
08522	00	V	500	27	0	0	2.5	0.7	0.5
08522	12	V	500	28	0	0	2.5	0.0	0.0
60020	00	V	500	29	0	0	3.5	-0.2	0.8
60020	12	V	500	29	0	0	3.7	-0.5	-0.4
71600	00	V	500	29	0	0	2.8	0.8	0.6
71600	12	V	500	30	0	0	3.1	1.1	0.3
72201	00	V	500	24	0	0	3.3	0.3	-1.7
72201	12	V	500	27	0	0	2.6	-0.3	-1.2
72402	00	V	500	29	0	0	2.3	0.4	0.2
72402	12	V	500	29	0	0	3.1	0.5	1.1
74494	00	V	500	29	0	0	1.8	-0.1	0.8
74494	12	V	500	29	0	0	2.1	0.2	0.7
78016	00	V	500	21	0	0	5.9	-0.2	-1.6
78016	12	V	500	20	0	0	2.3	-0.4	-1.5

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45